

JESTIN4.txt  
SEQUENCE LISTING

<110> JESTIN, Andre

ALBINA, Emanuel

Le CANN, Pierre

BLANCHARD, Phillippe

HUTET, Evelyne

ARNAULD, Claire

TRUONG, Catherine

MAHE, Dominique

CARIOLET, Roland

MADEC, Francois

<120> CIRCOVIRUS SEQUENCES ASSOCIATED WITH PIGLET WEIGHT LOSS  
DISEASE (PWD)

<130> 065691/0176

<140> US 09/514,245

<141> 2000-02-28

<150> FR 97/15396

<151> 1997-12-05

<160> 170

<170> PatentIn version 3.0

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<211> 1759

<212> DNA

<213> Type A PWD circovirus

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1 5 10 15		
gcc aag caa gaa aag cgg ccc gca acc cca taa gag gtg ggt gtt cac	96	
Ala Lys Gln Glu Lys Arg Pro Ala Thr Pro Glu Val Gly Val His		
20 25 30		
cct taataa tcc ttc cga gga gga gaa aaa caa aat acg gga gct tcc	144	
Pro Ser Phe Arg Gly Gly Glu Lys Gln Asn Thr Gly Ala Ser		
35 40 45		
aat ctc cct ttt tga tta ttt tgt ttg tgg cga gga agg ttt gga aga	192	
Asn Leu Pro Phe Leu Phe Cys Leu Trp Arg Gly Arg Phe Gly Arg		
50 55 60		
ggg tag aac tcc tca cct cca ggg gtt tgc gaa ttt tgc taa gaa gca	240	
Gly Asn Ser Ser Pro Pro Gly Val Cys Glu Phe Cys Glu Ala		
65 70		
gac ttt taa caa ggt gaa gtg gta ttt tgg tgc ccg ctg cca cat cga	288	
Asp Phe Gln Gly Glu Val Val Phe Trp Cys Pro Leu Pro His Arg		
75 80 85		
gaa agc gaa agg aac cga cca gca gaa taa aga ata ctg cag taa aga	336	
Glu Ser Glu Arg Asn Arg Pro Ala Glu Arg Ile Leu Gln Arg		
90 95 100		
agg cca cat act tat cga gtg tgg agc tcc gcg gaa cca ggg gaa gcg	384	
Arg Pro His Thr Tyr Arg Val Trp Ser Ser Ala Glu Pro Gly Glu Ala		
105 110 115		
cag cga cct gtc tac tgc tgt gag tac cct ttt gga gac ggg gtc ttt	432	
Gln Arg Pro Val Tyr Cys Cys Glu Tyr Pro Phe Gly Asp Gly Val Phe		
120 125 130 135		
ggt gac tgt agc cga gca gtt tcc tgt aac gta tgt gag aaa ttt ccg	480	
Gly Asp Cys Ser Arg Ala Val Ser Cys Asn Val Cys Glu Lys Phe Pro		
140 145 150		
cgg gct ggc tga act ttt gaa agt gag cgg gaa gat gca gaa gcg tga	528	
Arg Ala Gly Thr Phe Glu Ser Glu Arg Glu Asp Ala Glu Ala		
155 160 165		
ttg gaa gac agc tgt aca cgt cat agt ggg ccc gcc cggttgg gaa	576	
Leu Glu Asp Ser Cys Thr Arg His Ser Gly Pro Ala Arg Leu Trp Glu		
170 175 180		
gag cca gtg ggc ccg taa ttt tgc tga gcc tag gga cac cta ctg gaa	624	
Glu Pro Val Gly Pro Phe Cys Ala Gly His Leu Leu Glu		
185 190		
gcc tagtag aaa taa gtg gtg gga tgg ata tca tgg aga aga agt tgt	672	
Ala Lys Val Val Gly Trp Ile Ser Trp Arg Arg Ser Cys		
195 200 205		

## JESTIN4.txt

tgt ttt gga tga ttt tta tgg ctg gtt acc ttg gga tga tct act gag	720
Cys Phe Gly Phe Leu Trp Leu Val Thr Leu Gly Ser Thr Glu	
210 215 220	
act gtg tga ccg gta tcc att gac tgt aga gac taa agg ggg tac tgt	768
Thr Val Pro Val Ser Ile Asp Cys Arg Asp Arg Gly Tyr Cys	
225 230 235	
tcc ttt ttt gac ccg cag tat ttt gat tac cag caa tca ggc ccc cca	816
Ser Phe Phe Gly Pro Gln Tyr Phe Asp Tyr Gln Gln Ser Gly Pro Pro	
240 245 250	
gga atg gta ctc ctc aac tgc tgt ccc agc tgt aga agc tct cta tcg	864
Gly Met Val Leu Leu Asn Cys Cys Pro Ser Cys Arg Ser Ser Leu Ser	
255 260 265	
gag gat tac tac ttt gca att ttg gaa gac tgc tgg aga aca atc cac	912
Glu Asp Tyr Tyr Phe Ala Ile Leu Glu Asp Cys Trp Arg Thr Ile His	
270 275 280	
gga ggt acc cga agg ccg att tga agc agt gga ccc acc ctg tgc cct	960
Gly Gly Thr Arg Arg Pro Ile Ser Ser Gly Pro Thr Leu Cys Pro	
285 290 295	
ttt ccc ata taa aat aaa tta ctg agt ctt ttt tgt tat cac atc gta	1008
Phe Pro Ile Asn Lys Leu Leu Ser Leu Phe Cys Tyr His Ile Val	
300 305 310	
atg gtt ttt att ttt att cat tta gag ggt ctt tca gga taa att ctc	1056
Met Val Phe Ile Phe Ile His Leu Glu Gly Leu Ser Gly Ile Leu	
315 320 325	
tga att gta cat aaa tag tca acc tta cca cat aat ttt ggg ctg tgg	1104
Ile Val His Lys Ser Thr Leu Pro His Asn Phe Gly Leu Trp	
330 335 340	
ttg cat ttt gga gcg cat agc cca ggc ctg tgt gct cga cat tgg tgt	1152
Leu His Phe Gly Ala His Ser Pro Gly Leu Cys Ala Arg His Trp Cys	
345 350 355	
ggg tat tta aat gga gcc aca gct ggt ttc ttt tat tat ttg gct gga	1200
Gly Tyr Leu Asn Gly Ala Thr Ala Gly Phe Phe Tyr Tyr Leu Ala Gly	
360 365 370	
acc aat caa ttg ttt ggt cta gct ctg gtt tgg ggg tga agt acc tgg	1248
Thr Asn Gln Leu Phe Gly Leu Ala Leu Val Trp Gly Ser Thr Trp	
375 380 385	
agt ggt agg taa agg gct gcc tta tgg tgt ggc ggg agg agt agt taa	1296
Ser Gly Arg Arg Ala Ala Leu Trp Cys Gly Gly Arg Ser Ser	
390 395 400	
tat agg ggt cat agg cca agt tgg tgg agg ggg tta caa agt tgg cat	1344
Tyr Arg Gly His Arg Pro Ser Trp Trp Arg Gly Leu Gln Ser Trp His	
405 410 415	
cca aga taa caa cag tgg acc caa cac ctc ttt gat tag agg tga tgg	1392
Pro Arg Gln Gln Trp Thr Gln His Leu Phe Asp Arg Trp	
420 425 430	
ggt ctc tgg ggt aaa att cat att tag cct ttc taa tac ggt agt att	1440
Gly Leu Trp Gly Lys Ile His Ile Pro Phe Tyr Gly Ser Ile	

## JESTIN4.txt

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gga aag gta ggg gta ggg ggt tgg tgc cgc ctg agg ggg gga gga act			
Gly Lys Val Gly Val Gly Gly Trp Cys Arg Leu Arg Gly Gly Gly Thr			
450	455	460	1488
ggc cga tgt tga atc tca gct cgt taa cat tcc aag atg gct gcg agt			
Gly Arg Cys Ile Ser Ala Arg His Ser Lys Met Ala Ala Ser			
465	470	475	1536
gtc ctc ctc tta tgg tga gta caa att ctc tag aaa ggc ggg aat tga			
Val Leu Leu Leu Trp Val Gln Ile Leu Lys Gly Gly Asn			
480	485		1584
aga tac ccg tct ttc ggc gcc atc tgt aac ggt ttc tga agg cgg ggt			
Arg Tyr Pro Ser Phe Gly Ala Ile Cys Asn Gly Phe Arg Arg Gly			
490	495	500	1632
gta cca aat atg gtc ttc tcc gga gga tgt ttc caa gat ggc tgc ggg			
Val Pro Asn Met Val Phe Ser Gly Gly Cys Phe Gln Asp Gly Cys Gly			
505	510	515	1680
ggc ggg tcc gtc ttc tgc ggt aac gcc tcc ttg gcc acg tca tcc tat			
Gly Gly Ser Val Phe Cys Gly Asn Ala Ser Leu Ala Thr Ser Ser Tyr			
525	530	535	1728
aaa agt gaa aga agt gcg ctg ctg tag tat t			
Lys Ser Glu Arg Ser Ala Leu Leu Tyr			
540	545		1759

&lt;210&gt; 2

&lt;211&gt; 545

&lt;212&gt; PRT

&lt;213&gt; Type A PWD circovirus

&lt;400&gt; 2

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Ala Lys Gln Glu Lys Arg Pro Ala Thr Pro Glu Val Gly Val His Pro	20	25	30
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Ser Phe Arg Gly Gly Glu Lys Gln Asn Thr Gly Ala Ser Asn Leu Pro	35	40	45
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Phe Leu Phe Cys Leu Trp Arg Gly Arg Phe Gly Arg Gly Asn Ser Ser	50	55	60
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Pro Pro Gly Val Cys Glu Phe Cys Glu Ala Asp Phe Gln Gly Glu Val	65	70	75	80
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JESTIN4.txt

Val Phe Trp Cys Pro Leu Pro His Arg Glu Ser Glu Arg Asn Arg Pro  
85 90 95

Ala Glu Arg Ile Leu Gln Arg Arg Pro His Thr Tyr Arg Val Trp Ser  
100 105 110

Ser Ala Glu Pro Gly Glu Ala Gln Arg Pro Val Tyr Cys Cys Glu Tyr  
115 120 125

Pro Phe Gly Asp Gly Val Phe Gly Asp Cys Ser Arg Ala Val Ser Cys  
130 135 140

Asn Val Cys Glu Lys Phe Pro Arg Ala Gly Thr Phe Glu Ser Glu Arg  
145 150 155 160

Glu Asp Ala Glu Ala Leu Glu Asp Ser Cys Thr Arg His Ser Gly Pro  
165 170 175

Ala Arg Leu Trp Glu Glu Pro Val Gly Pro Phe Cys Ala Gly His Leu  
180 185 190

Leu Glu Ala Lys Val Val Gly Trp Ile Ser Trp Arg Arg Ser Cys Cys  
195 200 205

Phe Gly Phe Leu Trp Leu Val Thr Leu Gly Ser Thr Glu Thr Val Pro  
210 215 220

Val Ser Ile Asp Cys Arg Asp Arg Gly Tyr Cys Ser Phe Phe Gly Pro  
225 230 235 240

Gln Tyr Phe Asp Tyr Gln Gln Ser Gly Pro Pro Gly Met Val Leu Leu  
245 250 255

Asn Cys Cys Pro Ser Cys Arg Ser Ser Leu Ser Glu Asp Tyr Tyr Phe  
260 265 270

Ala Ile Leu Glu Asp Cys Trp Arg Thr Ile His Gly Gly Thr Arg Arg  
275 280 285

Pro Ile Ser Ser Gly Pro Thr Leu Cys Pro Phe Pro Ile Asn Lys Leu  
290 295 300

Leu Ser Leu Phe Cys Tyr His Ile Val Met Val Phe Ile Phe Ile His  
305 310 315 320

Leu Glu Gly Leu Ser Gly Ile Leu Ile Val His Lys Ser Thr Leu Pro  
325 330 335

JESTIN4.txt

His Asn Phe Gly Leu Trp Leu His Phe Gly Ala His Ser Pro Gly Leu  
340 345 350

Cys Ala Arg His Trp Cys Gly Tyr Leu Asn Gly Ala Thr Ala Gly Phe  
355 360 365

Phe Tyr Tyr Leu Ala Gly Thr Asn Gln Leu Phe Gly Leu Ala Leu Val  
370 375 380

Trp Gly Ser Thr Trp Ser Gly Arg Arg Ala Ala Leu Trp Cys Gly Gly  
385 390 395 400

Arg Ser Ser Tyr Arg Gly His Arg Pro Ser Trp Trp Arg Gly Leu Gln  
405 410 415

Ser Trp His Pro Arg Gln Gln Trp Thr Gln His Leu Phe Asp Arg Trp  
420 425 430

Gly Leu Trp Gly Lys Ile His Ile Pro Phe Tyr Gly Ser Ile Gly Lys  
435 440 445

Val Gly Val Gly Gly Trp Cys Arg Leu Arg Gly Gly Thr Gly Arg  
450 455 460

Cys Ile Ser Ala Arg His Ser Lys Met Ala Ala Ser Val Leu Leu  
465 470 475 480

Trp Val Gln Ile Leu Lys Gly Gly Asn Arg Tyr Pro Ser Phe Gly Ala  
485 490 495

Ile Cys Asn Gly Phe Arg Arg Gly Val Pro Asn Met Val Phe Ser Gly  
500 505 510

Gly Cys Phe Gln Asp Gly Cys Gly Gly Ser Val Phe Cys Gly Asn  
515 520 525

Ala Ser Leu Ala Thr Ser Ser Tyr Lys Ser Glu Arg Ser Ala Leu Leu  
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Tyr  
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<212> PRT

&lt;213&gt; Type A PWD circovirus

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Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe Thr  
 20 25 30

Leu Asn Asn Pro Ser Glu Glu Glu Lys Asn Lys Ile Arg Glu Leu Pro  
 35 40 45

Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Glu Glu Gly Leu Glu Glu  
 50 55 60

Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys Gln  
 65 70 75 80

Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile Glu  
 85 90 95

Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr Cys Ser Lys Glu  
 100 105 110

Gly His Ile Leu Ile Glu Cys Gly Ala Pro Arg Asn Gln Gly Lys Arg  
 115 120 125

Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu Thr Gly Ser Leu  
 130 135 140

Val Thr Val Ala Glu Gln Phe Pro Val Thr Tyr Val Arg Asn Phe Arg  
 145 150 155 160

Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met Gln Lys Arg Asp  
 165 170 175

Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly Lys  
 180 185 190

Ser Gln Trp Ala Arg Asn Phe Ala Glu Pro Arg Asp Thr Tyr Trp Lys  
 195 200 205

Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Glu Glu Val Val  
 210 215 220

Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu Arg  
 225 230 235 240

Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys Gly Gly Thr Val  
 245 250 255

Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro Gln  
 260 265 270

Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu Ala Leu Tyr Arg  
 275 280 285

Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Glu Gln Ser Thr  
 290 295 300

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Glu Val Pro Glu Gly Arg Phe Glu Ala Val Asp Pro Pro Cys Ala Leu  
305 310 315 320

Phe Pro Tyr Lys Ile Asn Tyr Val Phe Phe Val Ile Thr Ser Trp Phe  
325 330 335

Leu Phe Leu Phe Ile Arg Val Phe Gln Asp Lys Phe Ser Glu Leu Tyr  
340 345 350

Ile Asn Ser Gln Pro Tyr His Ile Ile Leu Gly Cys Gly Cys Ile Leu  
355 360 365

Glu Arg Ile Ala Gln Ala Cys Val Leu Asp Ile Gly Val Gly Ile Met  
370 375 380

Glu Pro Gln Leu Val Ser Phe Ile Ile Trp Leu Glu Pro Ile Asn Cys  
385 390 395 400

Leu Val Leu Trp Phe Gly Gly Glu Val Pro Gly Val Val Gly Lys Gly  
405 410 415

Leu Pro Tyr Gly Val Ala Gly Gly Val Val Asn Ile Gly Val Ile Gly  
420 425 430

Gln Val Gly Gly Gly Tyr Lys Val Gly Ile Gln Asp Asn Asn Ser  
435 440 445

Gly Pro Asn Thr Ser Leu Ile Arg Gly Asp Gly Val Ser Gly Val Lys  
450 455 460

Phe Ile Phe Ser Leu Ser Asn Thr Val Val Leu Glu Arg Gly Val Gly  
465 470 475 480

Ala Ala Gly Gly Glu Glu Leu Ala Asp Val Glu Ser Gln Leu Val Asn  
485 490 495

Ile Pro Arg Trp Leu Arg Val Ser Ser Ser Tyr Gly Glu Tyr Lys Phe  
500 505 510

Ser Arg Lys Ala Gly Ile Glu Asp Thr Arg Leu Ser Ala Pro Ser Val  
515 520 525

Thr Val Ser Glu Gly Gly Val Tyr Gln Ile Trp Ser Ser Pro Glu Asp  
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Val Ser Lys Met Ala Ala Gly Ala Gly Pro Ser Ser Ala Val Thr Pro  
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Pro Trp Pro Arg His Pro Ile Lys Val Lys Glu Val Arg Cys Cys Ser  
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Ile

<210> 4

<211> 553

<212> PRT

<213> Type A PWD circovirus

JESTIN4.txt

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Leu Pro Arg Arg Arg Lys Thr Lys Tyr Gly Ser Phe Gln Ser Pro Phe  
35 40 45

Leu Ile Ile Leu Phe Val Ala Arg Lys Val Trp Lys Arg Val Glu Leu  
50 55 60

Leu Thr Ser Arg Gly Leu Arg Ile Leu Leu Arg Ser Arg Leu Leu Thr  
65 70 75 80

Arg Ser Gly Ile Leu Val Pro Ala Ala Thr Ser Arg Lys Arg Lys Glu  
85 90 95

Pro Thr Ser Arg Ile Lys Asn Thr Ala Val Lys Lys Ala Thr Tyr Leu  
100 105 110

Ser Ser Val Glu Leu Arg Gly Thr Arg Gly Ser Ala Ala Thr Cys Leu  
115 120 125

Leu Leu Val Pro Phe Trp Arg Arg Gly Leu Trp Leu Pro Ser Ser Phe  
130 135 140

Leu Arg Met Glu Ile Ser Ala Gly Trp Leu Asn Phe Lys Ala Gly Arg  
145 150 155 160

Cys Arg Ser Val Ile Gly Arg Gln Leu Tyr Thr Ser Trp Ala Arg Pro  
165 170 175

Val Val Gly Arg Ala Ser Gly Pro Val Ile Leu Leu Ser Leu Gly Thr  
180 185 190

Pro Thr Gly Ser Leu Val Glu Ile Ser Gly Gly Met Asp Ile Met Glu  
195 200 205

Lys Lys Leu Leu Phe Trp Met Ile Phe Met Ala Gly Tyr Leu Gly Met  
210 215 220

Ile Tyr Asp Cys Val Thr Gly Ile His Leu Arg Leu Lys Gly Val Leu  
225 230 235 240

Phe Leu Phe Trp Pro Ala Val Phe Leu Pro Ala Ile Arg Pro Pro Arg  
245 250 255

Asn Gly Thr Pro Gln Leu Leu Ser Gln Leu Lys Leu Ser Ile Gly Gly  
260 265 270

Leu Leu Leu Cys Asn Phe Gly Arg Leu Leu Glu Asn Asn Pro Arg Arg  
275 280 285

Tyr Pro Lys Ala Asp Leu Lys Gln Trp Thr His Pro Val Pro Phe Ser  
290 295 300

His Ile Lys Ile Thr Glu Ser Phe Leu Leu Ser His Arg Asn Gly Phe  
305 310 315 320

## JESTIN4.txt

Tyr Phe Tyr Ser Phe Arg Gly Ser Phe Arg Ile Asn Ser Leu Asn Cys  
 325 330 335  
 Thr Ile Val Asn Leu Thr Thr Phe Trp Ala Val Val Ala Phe Trp Ser  
 340 345 350  
 Ala Pro Arg Pro Val Cys Ser Thr Leu Val Trp Val Phe Lys Trp Ser  
 355 360 365  
 His Ser Trp Phe Leu Leu Leu Phe Gly Trp Asn Gln Ser Ile Val Trp  
 370 375 380  
 Ser Ser Ser Gly Leu Gly Val Lys Tyr Leu Glu Trp Val Lys Gly Cys  
 385 390 395 400  
 Leu Met Val Trp Arg Glu Glu Leu Ile Gly Ser Ala Lys Leu Val Glu  
 405 410 415  
 Gly Val Thr Lys Leu Ala Ser Lys Ile Thr Thr Val Asp Pro Thr Pro  
 420 425 430  
 Leu Leu Glu Val Met Gly Ser Leu Gly Asn Ser Tyr Leu Ala Phe Leu  
 435 440 445  
 Ile Arg Tyr Trp Lys Gly Arg Gly Arg Gly Leu Val Pro Pro Glu Gly  
 450 455 460  
 Gly Arg Asn Trp Pro Met Leu Asn Leu Ser Ser Leu Thr Phe Gln Asp  
 465 470 475 480  
 Gly Cys Glu Cys Pro Pro Leu Met Val Ser Thr Asn Ser Leu Glu Arg  
 485 490 495  
 Arg Glu Leu Lys Ile Pro Val Phe Arg Arg His Leu Arg Phe Leu Lys  
 500 505 510  
 Ala Gly Cys Thr Lys Tyr Gly Leu Leu Arg Arg Met Phe Pro Arg Trp  
 515 520 525  
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 Leu Lys Lys Cys Ala Ala Val Val  
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 <212> DNA  
 <213> Type A PWD circovirus

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 ttggcacacc ccgccttcag aaaccgttac agatggcgcc gaaagacggg tatcttcaat 180  
 tcccccttt ctagagaatt tgtactcacc ataagaggag gacactcgca gccatcttgg 240

JESTIN4.txt

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caaaacaaca acttcttctc catgatatcc atcccaccac ttatttctac taggcttcca	1140
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ctccccgtatt ttgttttct cctcctcgga aggattatta agggtaaca cccacctctt	1680
atggggttgc gggccgctt tcttgcttgg cattttcact gacgctgccc aggtgctgcc	1740
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<212> PRT

<213> Type A PWD circovirus

JESTIN4.txt

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Gly Ala Cys Lys Pro Leu Pro Leu Val Glu Ala Ala Asp Thr Phe Ile  
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Gly Leu Leu Phe Leu Pro Gly Cys Gly Trp Leu Leu His Thr Asn Val  
20 25 30

Arg Leu Leu Gly Glu Ser Ser Ser Phe Phe Leu Ile Arg Ser Ser Gly  
35 40 45

Ile Glu Arg Lys Ser Lys Thr Gln Pro Ser Ser Pro Lys Ser Ser Pro  
50 55 60

Leu Val Gly Arg Trp Pro Asn Ala Phe Lys Ala Leu Phe Cys Val Lys  
65 70 75 80

Leu Leu Thr Phe His Tyr Lys Pro Ala Arg Gln Trp Met Ser Phe Ala  
85 90 95

Phe Pro Val Ser Trp Cys Phe Leu Ser Tyr Gln Leu Leu Ser Pro Trp  
100 105 110

Met Ser Ile Ser His Pro Ala Gly Arg Phe Trp Pro Phe Arg Leu Ser  
115 120 125

Arg Asp Val Ala Thr Leu Val Arg Lys Ser Val Pro Asp Lys Thr Val  
130 135 140

Thr Ala Ser Cys Asn Gly Thr Val Tyr Thr Leu Phe Lys Arg Pro Ser  
145 150 155 160

Ala Ser Ser Lys Phe Thr Leu Pro Phe Ile Cys Cys Arg Ser Gln Phe  
165 170 175

Val Ala Thr Cys Thr Met Thr Pro Gly Gly Pro Gln Pro Phe Leu Trp  
180 185 190

His Ala Arg Leu Lys Ala Ser Gly Leu Ser Val Gln Phe Gly Leu Leu  
195 200 205

Phe Leu His His Ser Pro Tyr Pro Ser Ser Thr Thr Thr Lys Ser Ser  
210 215 220

Lys Pro Gln Asn Gly Gln Ser Ser Arg Ser Leu Ser His Ser Arg Tyr  
225 230 235 240

Gly Asn Val Thr Ser Val Leu Pro Pro Val Thr Gly Lys Lys Ala Arg  
245 250 255

Leu Ile Lys Ile Val Leu Leu Ala Gly Trp Ser His Tyr Glu Glu Val  
260 265 270

Ala Thr Gly Ala Thr Ser Ala Arg Arg Leu Ile Val Val Lys Cys Asn  
275 280 285

Gln Phe Val Ala Pro Ser Cys Asp Val Ser Thr Gly Ser Pro Arg Asn  
290 295 300

Ser Ala Thr Ser Gly Gly Gln Ala Arg Lys Gly Tyr Leu Ile Phe Gln  
305 310 315 320

## JESTIN4.txt

Thr Lys Lys Thr Ile Val Asp Tyr His Asn Lys Asn Lys Asn Met Leu  
 325 330 335

Thr Lys Ser Leu Asn Glu Ser Asn Tyr Met Phe Leu Gly Trp Met Ile  
 340 345 350

Lys Pro Gln Pro Gln Met Lys Ser Arg Met Ala Trp Ala Gln Thr Ser  
 355 360 365

Ser Met Pro Thr Pro Ile Ile Ser Gly Cys Ser Thr Glu Lys Ile Ile  
 370 375 380

Gln Ser Ser Gly Ile Leu Gln Lys Thr Ser Gln Asn Pro Pro Ser Thr  
 385 390 395 400

Gly Pro Thr Thr Pro Leu Pro Ser Gly Pro Thr Ala Pro Pro Thr Thr  
 405 410 415

Leu Ile Pro Thr Met Pro Trp Thr Pro Pro Pro Pro Leu Thr Pro Met  
 420 425 430

Trp Ser Leu Leu Leu Pro Gly Leu Val Glu Lys Ile Leu Pro Ser Pro  
 435 440 445

Thr Glu Pro Thr Phe Asn Met Asn Leu Arg Glu Leu Val Thr Thr Asn  
 450 455 460

Ser Leu Tyr Pro Tyr Pro Thr Pro Ala Ala Gln Pro Pro Ser Ser Ser  
 465 470 475 480

Ala Ser Thr Ser Asp Ser Thr Leu Met Gly Leu His Ser Arg Thr Asp  
 485 490 495

Glu Glu Pro Ser Tyr Leu Asn Glu Leu Phe Ala Pro Ile Ser Ser Val  
 500 505 510

Arg Arg Glu Ala Gly Asp Thr Val Thr Glu Ser Pro Pro Thr Tyr Trp  
 515 520 525

Ile His Asp Glu Gly Ser Ser Thr Glu Leu Ile Ala Ala Pro Ala Pro  
 530 535 540

Gly Asp Glu Ala Thr Val Gly Gly Gln Gly Arg Gly Ile Phe Thr Phe  
 545 550 555 560

Ser Thr Arg Gln Gln Leu Ile  
 565

&lt;210&gt; 7

&lt;211&gt; 580

&lt;212&gt; PRT

&lt;213&gt; Type A PWD circovirus

&lt;400&gt; 7

Trp Arg Val Glu Ala Ala Ala Ala Gly Arg Cys Arg His Phe His Trp  
 1 5 10 15

## JESTIN4.txt

Ala Leu Phe Ala Ala Arg Leu Gly Met 20 25 Leu Pro Pro His Glu Gly Lys 30  
 Ile Ile Arg Gly Leu Leu Leu Phe Val Phe Tyr Pro Leu Lys Trp Asp 35 40 45  
 Gly Lys Lys Ile Ile Lys Asn Thr Ala Leu Phe Thr Gln Phe Leu Thr 50 55 60  
 Ser Ser Arg Val Glu Leu Pro Lys Arg Ile Lys Ser Leu Leu Leu Ser 65 70 75 80  
 Lys Val Leu His Leu Pro Ile Lys Thr Gly Ala Ala Val Asp Leu Phe 85 90 95  
 Arg Phe Ser Gly Val Leu Leu Ile Phe Phe Val Ala Thr Phe Phe Ala 100 105 110  
 Val Tyr Lys Asp Leu Thr Ser Ser Arg Pro Val Leu Pro Leu Ala Ala 115 120 125  
 Val Gln Arg Ser Ser His Thr Gly Lys Gln Leu Arg Pro Arg Gln His 130 135 140  
 Ser Tyr Gly Leu Leu Lys Arg Tyr Arg Ile His Ser Ile Glu Ala Pro 145 150 155 160  
 Gln Ser Phe Lys Gln Phe His Ala Pro Leu His Leu Leu Thr Ile Pro 165 170 175  
 Leu Cys Ser Tyr Val Asp Tyr His Ala Arg Gly Thr Thr Pro Leu Ala 180 185 190  
 Leu Pro Gly Thr Ile Lys Ser Leu Arg Pro Val Gly Val Pro Leu Arg 195 200 205  
 Thr Ser Ile Leu Pro Pro Ile Ser Ile Met Ser Phe Phe Asn Asn Asn 210 215 220  
 Gln Ile Ile Lys Ile Ala Pro Arg Pro Ile Ile Gln Ser Gln Thr Val 225 230 235 240  
 Pro Ile Trp Gln Ser Tyr Leu Ser Phe Pro Thr Ser Asn Arg Lys Gln 245 250 255  
 Gly Ala Thr Asn Gln Asn Gly Ala Ile Leu Gly Gly Leu Phe Pro Val 260 265 270  
 Gly Ser Ser Asp Trp Ser Tyr Phe Ser Glu Ile Pro Pro Asn Ser Ser 275 280 285  
 Gln Leu Lys Pro Leu Ser Ser Ser Phe Leu Gly Arg Leu Tyr Gly Phe 290 295 300  
 Ala Ser Lys Phe Cys His Val Trp Gly Thr Gly Lys Glu Trp Ile Phe 305 310 315 320  
 Tyr Ile Val Ser Asp Lys Lys Asn Asp Cys Arg Leu Pro Lys Lys Glu 325 330 335  
 Asn Leu Pro Asp Lys Leu Ile Phe Glu Arg Phe Gln Val Tyr Ile Thr 340 345 350

JESTIN4.txt

Leu Arg Val Val Tyr Asn Gln Ala Thr Thr Ala Asn Gln Leu Ala Tyr  
355 360 365

Gly Leu Gly Thr His Glu Val Asn Thr His Thr Asn Leu His Leu Trp  
370 375 380

Leu Gln Asn Arg Lys Asn Asn Pro Gln Phe Trp Asp Ile Thr Gln Asp  
385 390 395 400

Leu Glu Pro Lys Pro Thr Phe Tyr Arg Ser His Tyr Thr Phe Pro Gln  
405 410 415

Arg Ile Thr His Arg Ser Ser Tyr Asn Ile His Pro Asp Tyr Ala Leu  
420 425 430

Asn Thr Ser Pro Thr Val Phe Asn Ala Asp Leu Ile Val Val Thr Ser  
435 440 445

Gly Val Gly Arg Gln Asn Ser Thr Ile Pro Asp Arg Pro Tyr Phe Glu  
450 455 460

Tyr Lys Ala Lys Arg Ile Arg Tyr Tyr Gln Phe Pro Leu Pro Leu Pro  
465 470 475 480

Asn Thr Gly Gly Ser Pro Pro Leu Phe Gln Gly Ile Asn Phe Arg Leu  
485 490 495

Glu Asn Val Asn Trp Ser Pro Gln Ser His Gly Gly Arg Ile Thr Leu  
500 505 510

Val Phe Glu Arg Ser Leu Arg Ser Asn Phe Ile Gly Thr Lys Arg Arg  
515 520 525

Trp Arg Tyr Arg Asn Arg Phe Ala Pro His Val Leu Tyr Pro Arg Arg  
530 535 540

Arg Leu Ile Asn Gly Leu His Ser Arg Pro Arg Thr Arg Arg Arg Arg  
545 550 555 560

Tyr Arg Arg Arg Pro Trp Thr Met Arg Tyr Phe His Phe His Ala  
565 570 575

Ala Thr Thr Asn  
580

<210> 8

<211> 557

<212> PRT

<213> Type A PWD circovirus

<400> 8

Leu Ala Ser Arg Cys Arg Cys Cys Arg Pro Leu Thr Leu Ser Phe Ala  
1 5 10 15

Leu Cys Ser Phe Arg Gly Ala Val Gly Tyr Ser Thr Pro Thr Gly Tyr  
20 25 30

## JESTIN4.txt

Asp Lys Arg Pro Pro Ser Phe Cys Phe Val Pro Ala Glu Leu Arg Gly  
 35 40 45

Lys Gln Asn Asn Gln Lys His Arg Pro Leu Asn Pro Leu Pro Tyr Phe  
 50 55 60

Glu Glu Gly Gly Pro Thr Gln Ser Asn Gln Ser Ala Ser Lys Cys Pro  
 65 70 75 80

Ser Thr Thr Asn Gly His Gly Ser Gly Cys Arg Ser Leu Ser Leu Phe  
 85 90 95

Arg Gly Ala Ser Tyr Leu Ile Ser Cys Tyr Leu Leu Gly Cys Val Arg  
 100 105 110

Thr His Leu Glu Ala Ser Gly Pro Ser Ala Cys Arg Gly Thr Gln Gln  
 115 120 125

Ser Tyr Gly Lys Pro Ser Pro Thr Lys Pro Ser Gln Leu Arg Ala Thr  
 130 135 140

Glu Gln Leu Thr His Ser Phe Asn Gly Arg Ala Pro Gln Val Lys Ser  
 145 150 155 160

Leu Ser Arg Ser Ser Ala Ala Ala His Asn Ser Ser Leu Gln Val Arg  
 165 170 175

Leu Pro Gly Ala Arg Asn His Ser Ser Gly Thr Pro Gly Tyr Asn Gln  
 180 185 190

Gln Ala Pro Cys Arg Ser Ser Ala Tyr Phe Tyr Thr Thr Pro His Ile  
 195 200 205

Asp His Leu Leu Leu Gln Gln Lys Pro His Asn Lys His Ser Thr Val  
 210 215 220

Lys Pro His Asp Val Ser Val Thr His Gly Thr Asp Met Ser Gln Leu  
 225 230 235 240

Ser Leu Pro Tyr Gln Glu Lys Lys Pro Gly Cys Tyr Lys Ser Trp Cys  
 245 250 255

Asp Pro Gly Gly Pro Ile Thr Ser Arg Leu Gln Gln Gly Leu Gln Leu  
 260 265 270

Leu Glu Arg Asp Ser Ser Lys Ala Ile Lys Ser Ser Gln Gln Leu Val  
 275 280 285

Ile Trp Pro Pro Val Arg Leu Gly Ile Gln Leu Leu Pro Gly Val Arg  
 290 295 300

His Gly Lys Gly Met Tyr Phe Leu Asn Ser Leu Arg Lys Gln Met Thr  
 305 310 315 320

Ile Thr Lys Ile Lys Ile Lys Ser Pro Arg Glu Pro Tyr Ile Arg Gln  
 325 330 335

Ile Thr Cys Leu Tyr Asp Val Lys Gly Cys Leu Lys Pro Ser His Asn  
 340 345 350

Cys Lys Pro Ala Cys Leu Gly Pro Arg His Ala Arg Cys Gln His Pro  
 355 360 365

JESTIN4.txt

Tyr Lys Phe Pro Ala Val Val Pro Lys Lys Lys Ala Pro Val Leu Asn  
370 375 380  
Asn Pro Arg Ala Arg Thr Gln Pro His Leu Val Gln Leu Pro Leu Tyr  
385 390 395 400  
Leu Ala Ala Lys His His Pro Pro Leu Leu Leu Tyr Leu Pro Leu Gly  
405 410 415  
Leu Gln His Leu Pro Asn Cys Leu Gln Cys Gly Leu Tyr Cys Cys His  
420 425 430  
Val Trp Cys Arg Lys Ser Leu His His Pro Arg Gln Pro Leu Ile Ile  
435 440 445  
Gly Lys Tyr Pro Leu Ile Pro Phe Thr Pro Thr Pro Pro Gln His Arg  
450 455 460  
Arg Leu Pro Pro Pro Val Pro Arg His Gln Ile Glu Ala Arg Cys Glu  
465 470 475 480  
Leu Ile Ala Ala Leu Thr Arg Arg Lys His His Thr Cys Ile Arg Phe  
485 490 495  
Pro Pro Phe Gln Leu Tyr Gly Asp Lys Pro Ala Met Gln Leu Pro Lys  
500 505 510  
Gln Leu Arg Pro Thr Gly Phe Ile Thr Lys Glu Pro Pro His Lys Trp  
515 520 525  
Ser Pro Gln Pro Pro Pro Asp Thr Lys Gln Pro Leu Ala Glu Lys Ala  
530 535 540  
Val Asp Asp Leu Leu Ser Leu Leu Ala Ser Ser Tyr Tyr  
545 550 555

<210> 9

<211> 939

<212> DNA

<213> Type A PWD circovirus

<220>

<221> CDS

<222> (1)..(936)

<400> 9  
atg cca agc aag aaa agc ggc ccg caa ccc cat aag agg tgg gtg ttc 48  
Met Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe  
1 5 10 15  
acc ctt aat aat cct tcc gag gag gag aaa aac aaa ata cgg gag ctt 96  
Thr Leu Asn Asn Pro Ser Glu Glu Glu Lys Asn Lys Ile Arg Glu Leu  
20 25 30

## JESTIN4.txt

cca atc tcc ctt ttt gat tat ttt gtt ttt ggc gag gaa ggt ttg gaa	144
Pro Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Glu Glu Gly Leu Glu	
35 40 45	
gag ggt aga act cct cac ctc cag ggg ttt gcg aat ttt gct aag aag	192
Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys	
50 55 60	
cag act ttt aac aag gtg aag tgg tat ttt ggt gcc cgc tgc cac atc	240
Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile	
65 70 75 80	
gag aaa gcg aaa gga acc gac cag cag aat aaa gaa tac tgc agt aaa	288
Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr Cys Ser Lys	
85 90 95	
gaa ggc cac ata ctt atc gag ttt gga gct ccg cgg aac cag ggg aag	336
Glu Gly His Ile Leu Ile Glu Cys Gly Ala Pro Arg Asn Gln Gly Lys	
100 105 110	
cgc agc gac ctg tct act gct gtg agt acc ctt ttg gag acg ggg tct	384
Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu Thr Gly Ser	
115 120 125	
ttg gtg act gta gcc gag cag ttt cct gta acg tat gtg aga aat ttc	432
Leu Val Thr Val Ala Glu Gln Phe Pro Val Thr Tyr Val Arg Asn Phe	
130 135 140	
cgc ggg ctg gct gaa ctt ttg aaa gtg agc ggg aag atg cag cag cgt	480
Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg	
145 150 155 160	
gat tgg aag aca gct gta cac gtc ata gtg ggc ccg ccc ggt ttt ggg	528
Asp Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly	
165 170 175	
aag agc cag tgg gcc cgt aat ttt gct gag cct agg gac acc tac tgg	576
Lys Ser Gln Trp Ala Arg Asn Phe Ala Glu Pro Arg Asp Thr Tyr Trp	
180 185 190	
aag cct agt aga aat aag tgg tgg gat gga tat cat gga gaa gaa gtt	624
Lys Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Glu Glu Val	
195 200 205	
gtt gtt ttg gat gat ttt tat ggc tgg tta cct tgg gat gat cta ctg	672
Val Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu	
210 215 220	
aga ctg tgt gac cgg tat cca ttg act gta gag act aaa ggg ggt act	720
Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys Gly Gly Thr	
225 230 235 240	
gtt cct ttt ttg gcc cgc agt att ttg att acc agc aat cag gcc ccc	768
Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro	
245 250 255	
cag gaa tgg tac tcc tca act gct gtc cca gct gta gaa gct ctc tat	816
Gln Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu Ala Leu Tyr	
260 265 270	
cgg agg att act act ttg caa ttt tgg aag act gct gga gaa caa tcc	864
Arg Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Glu Gln Ser	
275 280 285	

JESTIN4.txt

acg gag gta ccc gaa ggc cga ttt gaa gca gtg gac cca ccc tgt gcc 912  
Thr Glu Val Pro Glu Gly Arg Phe Glu Ala Val Asp Pro Pro Cys Ala  
290 295 300

ctt ttc cca tat aaa ata aat tac tga 939  
Leu Phe Pro Tyr Lys Ile Asn Tyr  
305 310

<210> 10

<211> 312

<212> PRT

<213> Type A PWD circovirus

<400> 10

Met Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe 15  
1 5 10 15

Thr Leu Asn Asn Pro Ser Glu Glu Glu Lys Asn Lys Ile Arg Glu Leu 30  
20 25 30

Pro Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Glu Gly Leu Glu 45  
35 40 45

Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys 60  
50 55 60

Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile 80  
65 70 75 80

Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr Cys Ser Lys 95  
85 90 95

Glu Gly His Ile Leu Ile Glu Cys Gly Ala Pro Arg Asn Gln Gly Lys 110  
100 105 110

Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu Thr Gly Ser 125  
115 120 125

Leu Val Thr Val Ala Glu Gln Phe Pro Val Thr Tyr Val Arg Asn Phe 140  
130 135 140

Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg 160  
145 150 155 160

Asp Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly  
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## JESTIN4.txt

165

170

175

Lys Ser Gln Trp Ala Arg Asn Phe Ala Glu Pro Arg Asp Thr Tyr Trp  
 180 185 190

Lys Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Glu Glu Val  
 195 200 205

Val Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu  
 210 215 220

Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys Gly Gly Thr  
 225 230 235 240

Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro  
 245 250 255

Gln Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu Ala Leu Tyr  
 260 265 270

Arg Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Glu Gln Ser  
 275 280 285

Thr Glu Val Pro Glu Gly Arg Phe Glu Ala Val Asp Pro Pro Cys Ala  
 290 295 300

Leu Phe Pro Tyr Lys Ile Asn Tyr  
 305 310

<210> 11

<211> 702

<212> DNA

<213> Type A PWD circovirus

<220>

<221> CDS

<222> (1)..(699)

<400> 11

atg acg tgg cca agg agg cgt tac cgc aga aga cgg acc cgc ccc cgc  
 Met Thr Trp Pro Arg Arg Arg Tyr Arg Arg Arg Arg Thr Arg Pro Arg  
 1 5 10 15

agc cat ctt gga aac atc ctc cgg aga aga cca tat ttg gta cac ccc

48

96

## JESTIN4.txt

Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro Tyr Leu Val His Pro	20	25	30	
gcc ttc aga aac cgt tac aga tgg cgc cga aag acg ggt atc ttc aat				144
Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn	35	40	45	
tcc cgc ctt tct aga gaa ttt gta ctc acc ata aga gga gga cac tcg				192
Ser Arg Leu Ser Arg Glu Phe Val Leu Thr Ile Arg Gly Gly His Ser	50	55	60	
cag cca tct tgg aat gtt aac gag ctg aga ttc aac atc ggc cag ttc				240
Gln Pro Ser Trp Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln Phe	65	70	75	80
ctc ccc ccc tca ggc ggc acc aac ccc cta ccc cta cct ttc caa tac				288
Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr	85	90	95	
tac cgt att aga aag gct aaa tat gaa ttt tac ccc aga gac ccc atc				336
Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile	100	105	110	
acc tct aat caa aga ggt gtt ggg tcc act gtt gtt atc ttg gat gcc				384
Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala	115	120	125	
aac ttt gta acc ccc tcc acc aac ttg gcc tat gac ccc tat att aac				432
Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn	130	135	140	
tac tcc tcc cgc cac acc ata agg cag ccc ttt acc tac cac tcc agg				480
Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg	145	150	155	160
tac ttc acc ccc aaa cca gag cta gac caa aca att gat tgg ttc cag				528
Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe Gln	165	170	175	
cca aat aat aaa aga aac cag ctg tgg ctc cat tta aat acc cac acc				576
Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr	180	185	190	
aat gtc gag cac aca ggc ctg ggc tat gcg ctc caa aat gca acc aca				624
Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr Thr	195	200	205	
gcc caa aat tat gtg gta agg ttg act att tat gta caa ttc aga gaa				672
Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu	210	215	220	
ttt atc ctg aaa gac cct cta aat gaa taa				702
Phe Ile Leu Lys Asp Pro Leu Asn Glu	225	230		

&lt;210&gt; 12

&lt;211&gt; 233

&lt;212&gt; PRT

&lt;213&gt; Type A PWD circovirus

JESTIN4.txt

<400> 12

Met Thr Trp Pro Arg Arg Arg Tyr Arg Arg Arg Arg Thr Arg Pro Arg  
1 5 10 15

Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro Tyr Leu Val His Pro  
20 25 30

Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn  
35 40 45

Ser Arg Leu Ser Arg Glu Phe Val Leu Thr Ile Arg Gly Gly His Ser  
50 55 60

Gln Pro Ser Trp Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln Phe  
65 70 75 80

Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr  
85 90 95

Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile  
100 105 110

Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala  
115 120 125

Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn  
130 135 140

Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg  
145 150 155 160

Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe Gln  
165 170 175

Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr  
180 185 190

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr Thr  
195 200 205

Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu  
210 215 220

Phe Ile Leu Lys Asp Pro Leu Asn Glu  
225 230

JESTIN4.txt

<210> 13  
 <211> 621  
 <212> DNA  
 <213> Type A PWD circovirus

<220>  
 <221> CDS  
 <222> (1)..(618)

<400> 13		
atg ata tcc atc cca cca ctt att tct act agg ctt cca gta ggt gtc		48
Met Ile Ser Ile Pro Pro Leu Ile Ser Thr Arg Leu Pro Val Gly Val		
1 5 10 15		
cct agg ctc agc aaa att acg ggc cca ctg gct ctt ccc aca acc ggg		96
Pro Arg Leu Ser Lys Ile Thr Gly Pro Leu Ala Leu Pro Thr Thr Gly		
20 25 30		
cgg gcc cac tat gac gtg tac agc tgt ctt cca atc acg ctg ctg cat		144
Arg Ala His Tyr Asp Val Tyr Ser Cys Leu Pro Ile Thr Leu Leu His		
35 40 45		
ctt ccc gct cac ttt caa aag ttc agc cag ccc gcg gaa att tct cac		192
Leu Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser His		
50 55 60		
ata cgt tac agg aaa ctg ctc ggc tac agt cac caa aga ccc cgt ctc		240
Ile Arg Tyr Arg Lys Leu Leu Gly Tyr Ser His Gln Arg Pro Arg Leu		
65 70 75 80		
caa aag ggt act cac agc agt aga cag gtc gct gcg ctt ccc ctg gtt		288
Gln Lys Gly Thr His Ser Ser Arg Gln Val Ala Ala Leu Pro Leu Val		
85 90 95		
ccg cgg agc tcc aca ctc gat aag tat gtg gcc ttc ttt act gca gta		336
Pro Arg Ser Ser Thr Leu Asp Lys Tyr Val Ala Phe Phe Thr Ala Val		
100 105 110		
ttc ttt att ctg ctg gtc ggt tcc ttt cgc ttt ctc gat gtg gca gcg		384
Phe Phe Ile Leu Leu Val Gly Ser Phe Arg Phe Leu Asp Val Ala Ala		
115 120 125		
ggc acc aaa ata cca ctt cac ctt gtt aaa agt ctg ctt ctt agc aaa		432
Gly Thr Lys Ile Pro Leu His Leu Val Lys Ser Leu Leu Leu Ser Lys		
130 135 140		
att cgc aaa ccc ctg gag gtg agg agt tct acc ctc ttc caa acc ttc		480
Ile Arg Lys Pro Leu Glu Val Arg Ser Ser Thr Leu Phe Gln Thr Phe		
145 150 155 160		
ctc gcc aca aac aaa ata atc aaa aag gga gat tgg aag ctc ccg tat		528
Leu Ala Thr Asn Lys Ile Ile Lys Lys Gly Asp Trp Lys Leu Pro Tyr		

## JESTIN4.txt

165

170

175

ttt gtt ttt ctc ctc ctc gga agg att att aag ggt gaa cac cca cct  
 Phe Val Phe Leu Leu Gly Arg Ile Ile Lys Gly Glu His Pro Pro  
 180 185 190

576

ctt atg ggg ttg cgg gcc gct ttt ctt gct tgg cat ttt cac tga  
 Leu Met Gly Leu Arg Ala Ala Phe Leu Ala Trp His Phe His  
 195 200 205

621

&lt;210&gt; 14

&lt;211&gt; 206

&lt;212&gt; PRT

&lt;213&gt; Type A PWD circovirus

&lt;400&gt; 14

Met Ile Ser Ile Pro Pro Leu Ile Ser Thr Arg Leu Pro Val Gly Val  
 1 5 10 15

Pro Arg Leu Ser Lys Ile Thr Gly Pro Leu Ala Leu Pro Thr Thr Gly  
 20 25 30

Arg Ala His Tyr Asp Val Tyr Ser Cys Leu Pro Ile Thr Leu Leu His  
 35 40 45

Leu Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser His  
 50 55 60

Ile Arg Tyr Arg Lys Leu Leu Gly Tyr Ser His Gln Arg Pro Arg Leu  
 65 70 75 80

Gln Lys Gly Thr His Ser Ser Arg Gln Val Ala Ala Leu Pro Leu Val  
 85 90 95

Pro Arg Ser Ser Thr Leu Asp Lys Tyr Val Ala Phe Phe Thr Ala Val  
 100 105 110

Phe Phe Ile Leu Leu Val Gly Ser Phe Arg Phe Leu Asp Val Ala Ala  
 115 120 125

Gly Thr Lys Ile Pro Leu His Leu Val Lys Ser Leu Leu Leu Ser Lys  
 130 135 140

Ile Arg Lys Pro Leu Glu Val Arg Ser Ser Thr Leu Phe Gln Thr Phe  
 145 150 155 160

JESTIN4.txt

Leu Ala Thr Asn Lys Ile Ile Lys Lys Gly Asp Trp Lys Leu Pro Tyr  
165 170 175

Phe Val Phe Leu Leu Leu Gly Arg Ile Ile Lys Gly Glu His Pro Pro  
180 185 190

Leu Met Gly Leu Arg Ala Ala Phe Leu Ala Trp His Phe His  
195 200 205

<210> 15

<211> 1767

<212> DNA

<213> Type B PWD circovirus

<220>

<221> CDS

<222> (1)..(111)

<220>

<221> CDS

<222> (115)..(243)

<220>

<221> CDS

<222> (247)..(267)

<220>

<221> CDS

<222> (271)..(360)

<220>

<221> CDS

<222> (364)..(417)

<220>

JESTIN4.txt

<221> CDS

<222> (421)..(447)

<220>

<221> CDS

<222> (451)..(471)

<220>

<221> CDS

<222> (475)..(510)

<220>

<221> CDS

<222> (514)..(516)

<220>

<221> CDS

<222> (520)..(729)

<220>

<221> CDS

<222> (733)..(753)

<220>

<221> CDS

<222> (757)..(759)

<220>

<221> CDS

<222> (763)..(804)

JESTIN4.txt

<220>

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<222> (808)..(861)

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<222> (865)..(984)

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<222> (1237)..(1359)

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<222> (1363)..(1476)

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<221> CDS

<222> (1480)..(1737)

<220>

<221> CDS

<222> (1741)..(1767)

## JESTIN4.txt

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acc agc gca ctt cgg cag cgg cag cac ctc ggc agc acc tca gca gca	48	
Thr Ser Ala Leu Arg Gln Arg Gln His Leu Gly Ser Thr Ser Ala Ala		
1 5 10 15		
aca tgc cca gca aga aga atg gaa gaa gcg gac ccc aac ccc ata aaa	96	
Thr Cys Pro Ala Arg Arg Met Glu Glu Ala Asp Pro Asn Pro Ile Lys		
20 25 30		
ggt ggg tgt tca ctc tga ata atc ctt ccg aag acg acg gca aga aaa	144	
Gly Gly Cys Ser Leu Ile Ile Leu Pro Lys Thr Ser Ala Arg Lys		
35 40 45		
tac ggg atc ttc caa tat ccc tat ttg att att tta ttg ttg gcg agg	192	
Tyr Gly Ile Phe Gln Tyr Pro Tyr Leu Ile Ile Leu Leu Leu Ala Arg		
50 55 60		
agg gta atg agg aag gac gaa cac ctc acc tcc agg ggt tcg cta att	240	
Arg Val Met Arg Lys Asp Glu His Leu Thr Ser Arg Gly Ser Leu Ile		
65 70 75		
ttg tga aga agc aga ctt tta ata aag tga agt ggt att tgg ttg ccc	288	
Leu Arg Ser Arg Leu Leu Ile Lys Ser Gly Ile Trp Val Pro		
80 85 90		
gct gcc aca tcg aga aag cga aag gaa cag atc agc aga ata aag aat	336	
Ala Ala Thr Ser Arg Lys Arg Lys Glu Gln Ile Ser Arg Ile Lys Asn		
95 100 105		
act gca gta aag aag gca act tac tga tgg agt gtg gag ctc cta gat	384	
Thr Ala Val Lys Lys Ala Thr Tyr Trp Ser Val Glu Leu Leu Asp		
110 115 120		
ctc agg gac aac gga gtg acc tgt cta ctg ctg tga gta cct tgt tgg	432	
Leu Arg Asp Asn Gly Val Thr Cys Leu Leu Val Pro Cys Trp		
125 130 135		
aga gcg gga gtc tgg tga ccg ttg cag agc agc acc ctg taa cgt ttg	480	
Arg Ala Gly Val Trp Pro Leu Gln Ser Ser Thr Leu Arg Leu		
140 145 150		
tca gaa att tcc gcg ggc tgg ctg aac ttt tga aag tga gcg gga aaa	528	
Ser Glu Ile Ser Ala Gly Trp Leu Asn Phe Lys Ala Gly Lys		
155 160 165		
tgc aga agc gtg att gga aga cta atg tac acg tca ttg tgg ggc cac	576	
Cys Arg Ser Val Ile Gly Arg Leu Met Tyr Thr Ser Leu Trp Gly His		
170 175 180		
ctg ggt gtg gta aaa gca aat ggg ctg cta att ttg cag acc cgg aaa	624	
Leu Gly Val Val Lys Ala Asn Gly Leu Leu Ile Leu Gln Thr Arg Lys		
185 190 195		
cca cat act gga aac cac cta gaa aca agt ggt ggg atg gtt acc atg	672	
Pro His Thr Gly Asn His Leu Glu Thr Ser Gly Gly Met Val Thr Met		
200 205 210 215		
gtg aag aag tgg ttg tta ttg atg act ttt atg gct ggc tgc cct ggg	720	
Val Lys Lys Trp Leu Leu Leu Met Thr Phe Met Ala Gly Cys Pro Gly		
220 225 230		
atg atc tac tga gac tgt gtg atc gat atc cat tga ctg tag aga cta	768	

## JESTIN4.txt

Met Ile Tyr	Asp Cys Val Ile Asp	Ile His	Leu	Arg Leu	
235	240				
aag gtg gaa ctg tac ctt ttt tgg ccc gca gta ttc tga tta cca gca					816
Lys Val Glu Leu Tyr Leu Phe Trp Pro Ala Val Phe Leu Pro Ala					
245	250	255			
atc aga ccc cgt tgg aat ggt act cct caa ctg ctg tcc cag ctg tag					864
Ile Arg Pro Arg Trp Asn Gly Thr Pro Gln Leu Leu Ser Gln Leu					
260	265	270			
aag ctc ttt atc gga gga tta ctt cct tgg tat ttt gga aga atg cta					912
Lys Leu Phe Ile Gly Gly Leu Leu Pro Trp Tyr Phe Gly Arg Met Leu					
275	280	285	290		
cag aac aat cca cgg agg aag ggg gcc agt tcg tca ccc ttt ccc ccc					960
Gln Asn Asn Pro Arg Arg Lys Gly Ala Ser Ser Ser Pro Phe Pro Pro					
295	300	305			
cat gcc ctg aat ttc cat atg aaa taa att act gag tct ttt tta tca					1008
His Ala Leu Asn Phe His Met Lys Ile Thr Glu Ser Phe Leu Ser					
310	315	320			
ctt cgt aat ggt ttt tat tat tca tta agg gtt aag tgg ggg gtc ttt					1056
Leu Arg Asn Gly Phe Tyr Tyr Ser Leu Arg Val Lys Trp Gly Val Phe					
325	330	335			
aaa att aaa ttc tct gaa ttg tac ata cat ggt tac acg gat att gta					1104
Lys Ile Lys Phe Ser Glu Leu Tyr Ile His Gly Tyr Thr Asp Ile Val					
340	345	350			
ttc ctg gtc gta tat act gtt ttc gaa cgc agt gcc gag gcc tac gtc					1152
Phe Leu Val Val Tyr Thr Val Phe Glu Arg Ser Ala Glu Ala Tyr Val					
355	360	365			
gtc tac att tcc agc agt ttg tag tct cag cca cag ctg gtt tct ttt					1200
Val Tyr Ile Ser Ser Leu Ser Gln Pro Gln Leu Val Ser Phe					
370	375	380			
gtt gtt tgg ttg gaa gta atc aat agt gaa atc tag gac agg ttt ggg					1248
Val Val Trp Leu Glu Val Ile Asn Ser Glu Ile Asp Arg Phe Gly					
385	390	395			
ggt aaa gta ccg gga gtg gta gga gaa ggg ctg ggt tat ggt atg gcg					1296
Gly Lys Val Pro Gly Val Val Gly Glu Gly Leu Gly Tyr Gly Met Ala					
400	405	410	415		
gga gga gta gtt tac ata ggg gtc ata ggt gag ggc tgt ggc ctt tgt					1344
Gly Gly Val Val Tyr Ile Gly Val Ile Gly Glu Gly Cys Gly Leu Cys					
420	425	430			
tac aaa gtt atc atc taa aat aac agc act gga gcc cac tcc cct gtc					1392
Tyr Lys Val Ile Ile Asn Asn Ser Thr Gly Ala His Ser Pro Val					
435	440	445			
acc ctg ggt gat cgg gga gca ggg cca gaa ttc aac ctt aac ctt tct					1440
Thr Leu Gly Asp Arg Gly Ala Gly Pro Glu Phe Asn Leu Asn Leu Ser					
450	455	460			
tat tct gta gta ttc aaa ggg cac aga gcg ggg gtt tga ccc ccc tcc					1488
Tyr Ser Val Val Phe Lys Gly His Arg Ala Gly Val Pro Pro Ser					
465	470	475			

## JESTIN4.txt

tgg ggg aag aaa gtc att aat att gaa tct cat cat gtc cac cgc cca	1536
Trp Gly Lys Lys Val Ile Asn Ile Glu Ser His His Val His Arg Pro	
480 485 490	
gga ggg cgt tct gac tgc tgg tct gac agt ata tcc gaa ggt gcg	1584
Gly Gly Arg Ser Asp Cys Gly Ser Leu Asp Ser Ile Ser Glu Gly Ala	
495 500 505	
gga gag gcg ggt gtt gaa gat gcc att ttt cct tct cca gcg gta acg	1632
Gly Glu Ala Gly Val Glu Asp Ala Ile Phe Pro Ser Pro Ala Val Thr	
510 515 520 525	
gtg gcg ggg gto gac gag cca ggg gcg gcg gcg gag gat ctg gcc aag	1680
Val Ala Gly Val Asp Glu Pro Gly Ala Ala Ala Glu Asp Leu Ala Lys	
530 535 540	
atg gct gcg ggg gcg gtg tct tct tct tcg gta acg cct cct tgg ata	1728
Met Ala Ala Gly Ala Val Ser Ser Ser Val Thr Pro Pro Trp Ile	
545 550 555	
cgt cat atc tga aaa cga aag aag tgc gct gta agt att	1767
Arg His Ile Lys Arg Lys Lys Cys Ala Val Ser Ile	
560 565	

&lt;210&gt; 16

&lt;211&gt; 569

&lt;212&gt; PRT

&lt;213&gt; Type B PWD circovirus

&lt;400&gt; 16

Thr Ser Ala Leu Arg Gln Arg Gln His Leu Gly Ser Thr Ser Ala Ala	
1 5 10 15	

Thr Cys Pro Ala Arg Arg Met Glu Glu Ala Asp Pro Asn Pro Ile Lys	
20 25 30	

Gly Gly Cys Ser Leu Ile Ile Leu Pro Lys Thr Ser Ala Arg Lys Tyr	
35 40 45	

Gly Ile Phe Gln Tyr Pro Tyr Leu Ile Ile Leu Leu Leu Ala Arg Arg	
50 55 60	

Val Met Arg Lys Asp Glu His Leu Thr Ser Arg Gly Ser Leu Ile Leu	
65 70 75 80	

Arg Ser Arg Leu Leu Ile Lys Ser Gly Ile Trp Val Pro Ala Ala Thr	
85 90 95	

Ser Arg Lys Arg Lys Glu Gln Ile Ser Arg Ile Lys Asn Thr Ala Val	
100 105 110	

JESTIN4.txt

Lys Lys Ala Thr Tyr Trp Ser Val Glu Leu Leu Asp Leu Arg Asp Asn  
115 120 125

Gly Val Thr Cys Leu Leu Leu Val Pro Cys Trp Arg Ala Gly Val Trp  
130 135 140

Pro Leu Gln Ser Ser Thr Leu Arg Leu Ser Glu Ile Ser Ala Gly Trp  
145 150 155 160

Leu Asn Phe Lys Ala Gly Lys Cys Arg Ser Val Ile Gly Arg Leu Met  
165 170 175

Tyr Thr Ser Leu Trp Gly His Leu Gly Val Val Lys Ala Asn Gly Leu  
180 185 190

Leu Ile Leu Gln Thr Arg Lys Pro His Thr Gly Asn His Leu Glu Thr  
195 200 205

Ser Gly Gly Met Val Thr Met Val Lys Lys Trp Leu Leu Leu Met Thr  
210 215 220

Phe Met Ala Gly Cys Pro Gly Met Ile Tyr Asp Cys Val Ile Asp Ile  
225 230 235 240

His Leu Arg Leu Lys Val Glu Leu Tyr Leu Phe Trp Pro Ala Val Phe  
245 250 255

Leu Pro Ala Ile Arg Pro Arg Trp Asn Gly Thr Pro Gln Leu Leu Ser  
260 265 270

Gln Leu Lys Leu Phe Ile Gly Gly Leu Leu Pro Trp Tyr Phe Gly Arg  
275 280 285

Met Leu Gln Asn Asn Pro Arg Arg Lys Gly Ala Ser Ser Ser Pro Phe  
290 295 300

Pro Pro His Ala Leu Asn Phe His Met Lys Ile Thr Glu Ser Phe Leu  
305 310 315 320

Ser Leu Arg Asn Gly Phe Tyr Tyr Ser Leu Arg Val Lys Trp Gly Val  
325 330 335

Phe Lys Ile Lys Phe Ser Glu Leu Tyr Ile His Gly Tyr Thr Asp Ile  
340 345 350

Val Phe Leu Val Val Tyr Thr Val Phe Glu Arg Ser Ala Glu Ala Tyr  
Page 36

355

360

365

Val Val Tyr Ile Ser Ser Ser Leu Ser Gln Pro Gln Leu Val Ser Phe  
 370 375 380

Val Val Trp Leu Glu Val Ile Asn Ser Glu Ile Asp Arg Phe Gly Gly  
 385 390 395 400

Lys Val Pro Gly Val Val Gly Glu Gly Leu Gly Tyr Gly Met Ala Gly  
 405 410 415

Gly Val Val Tyr Ile Gly Val Ile Gly Glu Gly Cys Gly Leu Cys Tyr  
 420 425 430

Lys Val Ile Ile Asn Asn Ser Thr Gly Ala His Ser Pro Val Thr Leu  
 435 440 445

Gly Asp Arg Gly Ala Gly Pro Glu Phe Asn Leu Asn Leu Ser Tyr Ser  
 450 455 460

Val Val Phe Lys Gly His Arg Ala Gly Val Pro Pro Ser Trp Gly Lys  
 465 470 475 480

Lys Val Ile Asn Ile Glu Ser His His Val His Arg Pro Gly Gly Arg  
 485 490 495

Ser Asp Cys Gly Ser Leu Asp Ser Ile Ser Glu Gly Ala Gly Glu Ala  
 500 505 510

Gly Val Glu Asp Ala Ile Phe Pro Ser Pro Ala Val Thr Val Ala Gly  
 515 520 525

Val Asp Glu Pro Gly Ala Ala Ala Glu Asp Leu Ala Lys Met Ala Ala  
 530 535 540

Gly Ala Val Ser Ser Ser Ser Val Thr Pro Pro Trp Ile Arg His Ile  
 545 550 555 560

Lys Arg Lys Lys Cys Ala Val Ser Ile  
 565

<210> 17

<211> 542

<212> PRT

<213> Type B PWD circovirus

JESTIN4.txt

<400> 17

Pro Ala His Phe Gly Ser Gly Ser Thr Ser Ala Ala Pro Gln Gln  
1 5 10 15

His Ala Gln Gln Glu Glu Trp Lys Lys Arg Thr Pro Thr Pro Lys Val  
20 25 30

Gly Val His Ser Glu Ser Phe Arg Arg Arg Ala Gln Glu Asn Thr Gly  
35 40 45

Ser Ser Asn Ile Pro Ile Leu Phe Tyr Cys Trp Arg Gly Gly Arg  
50 55 60

Thr Asn Thr Ser Pro Pro Gly Val Arg Phe Cys Glu Glu Ala Asp Phe  
65 70 75 80

Ser Glu Val Val Phe Gly Cys Pro Leu Pro His Arg Glu Ser Glu Arg  
85 90 95

Asn Arg Ser Ala Glu Arg Ile Leu Gln Arg Arg Gln Leu Thr Asp Gly  
100 105 110

Val Trp Ser Ser Ile Ser Gly Thr Thr Glu Pro Val Tyr Cys Cys Glu  
115 120 125

Tyr Leu Val Gly Glu Arg Glu Ser Gly Asp Arg Cys Arg Ala Ala Pro  
130 135 140

Cys Asn Val Cys Gln Lys Phe Pro Arg Ala Gly Thr Phe Glu Ser Glu  
145 150 155 160

Arg Glu Asn Ala Glu Ala Cys Thr Arg His Cys Gly Ala Thr Trp Val  
165 170 175

Trp Lys Gln Met Gly Cys Phe Cys Arg Pro Gly Asn His Ile Leu Glu  
180 185 190

Thr Thr Lys Gln Val Val Gly Trp Leu Pro Trp Arg Ser Gly Cys Tyr  
195 200 205

Leu Leu Trp Leu Ala Ala Leu Gly Ser Thr Glu Thr Val Ser Ile Ser  
210 215 220

Ile Asp Cys Arg Asp Arg Trp Asn Cys Thr Phe Phe Gly Pro Gln Tyr  
225 230 235 240

Ser Asp Tyr Gln Gln Ser Asp Pro Val Gly Met Val Leu Leu Asn Cys  
245 250 255

Cys Pro Ser Cys Arg Ser Ser Leu Ser Glu Asp Tyr Phe Leu Gly Ile  
260 265 270

Leu Glu Glu Cys Tyr Arg Thr Ile His Gly Gly Arg Gly Pro Val Arg  
275 280 285

His Pro Phe Pro Pro Met Pro Asn Lys Leu Leu Ser Leu Phe Tyr His  
290 295 300

Phe Val Met Val Phe Ile Ile His Gly Leu Ser Gly Gly Ser Leu Lys  
305 310 315 320

JESTIN4.txt

Leu Asn Ser Leu Asn Cys Thr Tyr Met Val Thr Arg Ile Leu Tyr Ser  
325 330 335

Trp Ser Tyr Ile Leu Phe Ser Asn Ala Val Pro Arg Pro Thr Trp Ser  
340 345 350

Thr Phe Pro Ala Val Cys Ser Leu Ser His Ser Trp Phe Leu Leu Leu  
355 360 365

Phe Gly Trp Lys Ser Ile Val Lys Ser Arg Thr Gly Leu Gly Val Lys  
370 375 380

Tyr Arg Glu Trp Glu Lys Gly Trp Val Met Val Trp Arg Glu Glu Val  
385 390 395 400

Arg Ala Val Ala Phe Val Thr Lys Leu Ser Ser Lys Ile Thr Ala Leu  
405 410 415

Glu Pro Thr Pro Leu Ser Pro Trp Val Ile Gly Glu Gln Gly Gln Asn  
420 425 430

Ser Thr Leu Thr Phe Leu Ile Leu Tyr Ser Lys Gly Thr Glu Arg Gly  
435 440 445

Phe Asp Pro Pro Pro Gly Gly Arg Lys Ser Leu Ile Leu Asn Leu Ile  
450 455 460

Met Ser Thr Ala Gln Glu Gly Val Leu Thr Val Val Arg Leu Thr Val  
465 470 475 480

Tyr Pro Lys Val Arg Glu Arg Arg Val Leu Lys Met Pro Phe Phe Leu  
485 490 495

Leu Gln Arg Arg Trp Arg Gly Trp Thr Ser Gln Gly Arg Arg Arg Arg  
500 505 510

Ile Trp Pro Arg Trp Leu Arg Gly Arg Cys Leu Leu Leu Arg Arg Leu  
515 520 525

Leu Gly Tyr Val Ile Ser Glu Asn Glu Arg Ser Ala Leu Val  
530 535 540

<210> 18

<211> 566

<212> PRT

<213> Type B PWD circovirus

<400> 18

Gln Arg Thr Ser Ala Ala Ala Ala Pro Arg Gln His Leu Ser Ser Asn  
1 5 10 15

Met Pro Ser Lys Lys Asn Gly Arg Ser Gly Pro Gln Pro His Lys Arg  
20 25 30

Trp Val Phe Thr Leu Asn Asn Pro Ser Glu Asp Glu Arg Lys Lys Ile  
35 40 45

JESTIN4.txt

Arg Asp Leu Pro Ile Ser Leu Phe Asp Tyr Phe Ile Val Gly Glu Glu  
50 55 60  
Gly Asn Glu Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe  
65 70 75 80  
Val Lys Lys Gln Thr Phe Asn Lys Val Lys Trp Tyr Leu Gly Ala Arg  
85 90 95  
Cys His Ile Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr  
100 105 110  
Cys Ser Lys Glu Gly Asn Leu Leu Met Glu Cys Gly Ala Pro Arg Ser  
115 120 125  
Gln Gly Gln Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu  
130 135 140  
Ser Gly Ser Leu Val Thr Val Ala Glu Gln His Pro Val Thr Phe Val  
145 150 155 160  
Arg Asn Phe Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met  
165 170 175  
Gln Lys Arg Asp Trp Lys Thr Asn Val His Val Ile Val Gly Pro Pro  
180 185 190  
Gly Cys Gly Lys Ser Lys Trp Ala Ala Asn Phe Ala Asp Pro Glu Thr  
195 200 205  
Thr Tyr Trp Lys Pro Pro Arg Asn Lys Trp Trp Asp Gly Tyr His Gly  
210 215 220  
Glu Glu Val Val Val Ile Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp  
225 230 235 240  
Asp Leu Leu Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys  
245 250 255  
Gly Gly Thr Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn  
260 265 270  
Gln Thr Pro Leu Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu  
275 280 285  
Ala Leu Tyr Arg Arg Ile Thr Ser Leu Val Phe Trp Lys Asn Ala Thr  
290 295 300  
Glu Gln Ser Thr Glu Glu Gly Gly Gln Phe Val Thr Leu Ser Pro Pro  
305 310 315 320  
Cys Pro Glu Phe Pro Tyr Glu Ile Asn Tyr Val Phe Phe Ile Thr Ser  
325 330 335  
Trp Phe Leu Leu Phe Ile Lys Gly Val Gly Gly Leu Ile Val His Thr  
340 345 350  
Trp Leu His Gly Tyr Cys Ile Pro Gly Arg Ile Tyr Cys Phe Arg Thr  
355 360 365  
Gln Cys Arg Gly Leu Arg Gly Leu His Phe Gln Gln Phe Val Val Ser  
370 375 380

JESTIN4.txt

Ala Thr Ala Gly Phe Phe Cys Cys Leu Val Gly Ser Asn Gln Asn Leu  
 385 390 395 400

Gly Gln Val Trp Gly Ser Thr Gly Ser Gly Arg Arg Arg Ala Gly Leu  
 405 410 415

Trp Tyr Gly Gly Arg Ser Ser Leu His Arg Gly His Arg Gly Leu Trp  
 420 425 430

Pro Leu Leu Gln Ser Tyr His Leu Lys Gln His Trp Ser Pro Leu Pro  
 435 440 445

Cys His Pro Gly Ser Gly Ser Arg Ala Arg Ile Gln Pro Pro Phe Leu  
 450 455 460

Phe Cys Ser Ile Gln Arg Ala Gln Ser Gly Gly Leu Thr Pro Leu Leu  
 465 470 475 480

Gly Glu Glu Ser His Ile Ser Ser Cys Pro Pro Pro Arg Arg Ala Phe  
 485 490 495

Leu Trp Phe Ala Gln Tyr Ile Arg Arg Cys Gly Arg Gly Gly Cys Arg  
 500 505 510

Cys His Phe Ser Phe Ser Ser Gly Asn Gln Gly Gly Gly Arg Ala  
 515 520 525

Arg Gly Gly Gly Gly Ser Gly Gln Asp Gly Cys Gly Gly Gly Val  
 530 535 540

Phe Phe Phe Gly Asn Ala Ser Leu Asp Thr Ser Tyr Leu Lys Thr Lys  
 545 550 555 560

Glu Val Arg Cys Lys Tyr  
 565

<210> 19

<211> 1767

<212> DNA

<213> Type B PWD circovirus

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 agaagaagac accgcccccg cagccatctt gcccagatcc tccgcccggc cccctggctc 120  
 gtccacccccc gccaccgtta ccgctggaga aggaaaaatg gcatcttcaa cacccgcctc 180  
 tcccgcacct tcggatatac tgtcaagcga accacagtca gaacgccctc ctgggcggtg 240  
 gacatgatga gattcaatat taatgacttt cttccccag gaggggggtc aaaaaaaccgc 300  
 tctgtgccct ttgaatacta cagaataaga aaggtaagg ttgaattctg gccctgctcc 360  
 ccgatcaccc agggtgacag gggagtggc tccagtgctg ttattttaga tgataacttt 420  
 gtaacaaagg ccacagccct cacctatgac ccctatgtaa actactcctc ccggccatacc 480

JESTIN4.txt

ataaccgc	ccttctccta	ccactccgg	tactttaccc	ccaaacctgt	cctagattc	540
actattgatt	acttccaacc	aaacaacaaa	agaaaccgc	tgtggctgag	actacaaact	600
gctggaaatg	tagaccacgt	aggcctcggc	actgcgttc	aaaacagtat	atacgaccag	660
gaataacaata	tccgtgtaac	catgtatgta	caattcagag	aatttaattt	taaagacccc	720
ccacttaacc	cttaatgaat	aataaaaacc	attacgaagt	gataaaaaag	actcagtaat	780
ttatttcata	tggaaattca	gggcatgggg	gggaaagggt	gacgaactgg	cccccttcct	840
ccgtggattg	ttctgttagca	ttcttccaaa	ataccaagga	agtaatcctc	cgataaagag	900
cttctacagc	tgggacagca	gttgaggagt	accattccaa	cggggctctga	ttgctggtaa	960
tcagaatact	gcgggccaaa	aaaggtacag	ttccaccttt	agtctctaca	gtcaatggat	1020
atcgatcaca	cagtctcagt	agatcatccc	agggcagcca	gccataaaag	tcatcaataa	1080
caaccacttc	ttcaccatgg	taaccatccc	accacttgtt	tctaggtggt	ttccagtatg	1140
tggtttccgg	gtctgcaaaa	ttagcagccc	atttgcttt	accacaccca	ggtggcccca	1200
caatgacgtg	tacattagtc	ttccaatcac	gcttctgcat	tttcccgctc	actttcaaaa	1260
gttcagccag	cccgcgaaaa	tttctgacaa	acgttacagg	gtgctgctct	gcaacggtca	1320
ccagactccc	gctctccaaac	aaggtaactca	cagcagtaga	caggtcactc	cgttgtccct	1380
gagatctagg	agctccacac	tccatcagta	agttgccttc	tttactgcag	tattctttat	1440
tctgctgatc	tgttccttc	gctttctcga	tgtggcagcg	ggcacccaaa	taccacttca	1500
ctttattaaa	agtctgcttc	ttcacaaaat	tagcgaaccc	ctggaggtga	ggtgttcgtc	1560
cttcctcatt	accctcctcg	ccaacaataa	aataatcaa	tagggatatt	ggaagatccc	1620
gtatttctt	gcgctcgtct	tcggaaggat	tattcagagt	gaacacccac	cttttatggg	1680
gttgggtcc	gcttcttcca	ttcttcttgc	tgggcatgtt	gctgctgagg	tgctgccgag	1740
gtgctgccgc	tgccgaagtg	cgctggt				1767

<210> 20

<211> 567

<212> PRT

<213> Type B PWD circovirus

<400> 20

Gly Ala Cys Lys Pro Leu Pro Leu Val Glu Ala Ala Gly Cys Cys Cys  
1 5 10 15

Ala Trp Cys Ser Ser His Phe Phe Arg Val Gly Val Gly Tyr Phe Thr  
20 25 30

JESTIN4.txt

Pro Thr Glu Ser Tyr Asp Lys Arg Leu Arg Ala Cys Ser Phe Val Pro  
35 40 45

Asp Glu Leu Ile Gly Ile Gln Asn Asn Gln Gln Arg Pro Pro Tyr His  
50 55 60

Pro Leu Val Phe Val Glu Gly Gly Pro Thr Arg Asn Gln Ser Ser Ala  
65 70 75 80

Ser Lys Tyr Leu Ser Thr Thr Asn Pro His Gly Ser Gly Cys Arg Ser  
85 90 95

Leu Ser Leu Phe Leu Asp Ala Ser Tyr Leu Ile Ser Cys Tyr Leu Leu  
100 105 110

Cys Ser Val Ser Pro Thr His Leu Glu Ile Glu Pro Val Val Ser His  
115 120 125

Gly Thr Gln Gln Ser Tyr Arg Thr Pro Ser Arg Ser Asp Pro Ser Arg  
130 135 140

Gln Leu Ala Ala Gly Gln Leu Thr Gln Phe Asn Gly Arg Ala Pro Gln  
145 150 155 160

Val Lys Ser Leu Ser Arg Ser Phe Ala Ser Ala His Asn Ser Ser His  
165 170 175

Val Arg Gln Pro Ala Val Gln Thr His Tyr Phe Cys Ile Pro Gln Asn  
180 185 190

Gln Leu Gly Pro Phe Trp Met Ser Ser Val Val Phe Cys Thr Thr Pro  
195 200 205

His Asn Gly His His Leu Leu Pro Gln Gln His Ser Lys His Ser Ala  
210 215 220

Ala Arg Pro His Asp Val Ser Val Thr His Asp Ile Asp Met Ser Gln  
225 230 235 240

Leu Ser Leu His Phe Gln Val Lys Lys Pro Gly Cys Tyr Glu Ser Trp  
245 250 255

Cys Asp Ser Gly Thr Pro Ile Thr Ser Arg Leu Gln Gln Gly Leu Gln  
260 265 270

Leu Leu Glu Lys Asp Ser Ser Lys Arg Pro Ile Lys Ser Ser His Leu  
275 280 285

Val Ile Trp Pro Pro Leu Pro Gly Thr Arg Gly Lys Gly Gly Met Gly  
290 295 300

Gln Ile Glu Met His Phe Leu Asn Ser Leu Arg Lys Lys Thr Ile Thr  
305 310 315 320

Lys Ile Ile Pro Asn Leu Pro Pro Asp Lys Phe Asn Phe Glu Arg Phe  
325 330 335

Gln Val Tyr Met Thr Val Arg Ile Asn Tyr Glu Gln Asp Tyr Ile Ser  
340 345 350

Asn Glu Phe Ala Thr Gly Leu Gly Val His Asp Val Asn Gly Ala Thr  
355 360 365

JESTIN4.txt

Gln Leu Arg Leu Trp Leu Gln Asn Arg Lys Asn Asn Pro Gln Phe Tyr  
370 375 380

Asp Ile Thr Phe Asp Leu Val Pro Lys Pro Thr Phe Tyr Arg Ser His  
385 390 395 400

Tyr Ser Phe Pro Gln Thr Ile Thr His Arg Ser Ser Tyr Asn Val Tyr  
405 410 415

Pro Asp Tyr Thr Leu Ala Thr Ala Lys Thr Val Pro Asn Asp Asp Leu  
420 425 430

Ile Val Ala Ser Ser Gly Val Gly Arg Asp Gly Gln Thr Ile Pro Ser  
435 440 445

Cys Pro Trp Phe Glu Val Lys Val Lys Arg Ile Arg Tyr Tyr Glu Phe  
450 455 460

Pro Val Ser Arg Pro Asn Ser Gly Gly Pro Pro Leu Phe Asp Asn  
465 470 475 480

Ile Asn Phe Arg Met Met Asp Val Ala Trp Ser Pro Thr Arg Val Thr  
485 490 495

Thr Arg Lys Val Thr Tyr Gly Phe Thr Arg Ser Leu Arg Thr Asn Phe  
500 505 510

Ile Gly Asn Lys Arg Arg Trp Arg Tyr Arg His Arg Pro His Val Leu  
515 520 525

Trp Pro Arg Arg Arg Leu Ile Gln Gly Leu His Ser Arg Pro Arg His  
530 535 540

Arg Arg Arg Arg Tyr Arg Arg Pro Tyr Thr Met Asp Ser Phe Ser  
545 550 555 560

Leu Leu Ala Ser Tyr Thr Asn  
565

<210> 21

<211> 566

<212> PRT

<213> Type B PWD circovirus

<400> 21

Trp Arg Val Glu Ala Ala Ala Ala Gly Arg Cys Cys Arg Leu Leu Leu  
1 5 10 15

Met Gly Leu Leu Phe Phe Pro Leu Leu Pro Gly Trp Gly Trp Leu Leu  
20 25 30

His Thr Asn Val Arg Phe Leu Gly Glu Ser Ser Ser Arg Leu Phe Ile  
35 40 45

Arg Ser Arg Gly Ile Asp Arg Asn Ser Lys Ile Thr Pro Ser Ser Pro  
50 55 60

JESTIN4.txt

Leu Ser Ser Pro Arg Val Gly Arg Trp Pro Asn Ala Leu Lys Thr Phe  
65 70 75 80  
Phe Cys Val Lys Leu Leu Thr Phe His Tyr Lys Pro Ala Arg Gln Trp  
85 90 95  
Met Ser Phe Ala Phe Pro Val Ser Cys Phe Leu Ser Tyr Gln Leu Leu  
100 105 110  
Ser Pro Leu Lys Ser Ile Ser His Pro Ala Gly Leu Asp Pro Cys Arg  
115 120 125  
Leu Ser Arg Asp Val Ala Thr Leu Val Lys Asn Ser Leu Pro Leu Arg  
130 135 140  
Thr Val Thr Ala Ser Cys Cys Gly Thr Val Asn Thr Leu Phe Lys Arg  
145 150 155 160  
Pro Ser Ala Ser Ser Lys Phe Thr Leu Pro Phe Ile Cys Phe Arg Ser  
165 170 175  
Gln Phe Val Leu Thr Cys Thr Met Thr Pro Gly Gly Pro His Pro Leu  
180 185 190  
Leu Leu His Ala Ala Leu Lys Ala Ser Gly Ser Val Val Tyr Gln Phe  
195 200 205  
Gly Gly Leu Phe Leu His His Ser Pro Trp Pro Ser Ser Thr Thr Thr  
210 215 220  
Ile Ser Ser Lys Pro Gln Ser Gly Gln Ser Ser Arg Ser Leu Ser His  
225 230 235 240  
Ser Arg Tyr Gly Asn Val Thr Ser Val Leu Pro Pro Val Thr Gly Lys  
245 250 255  
Lys Ala Arg Leu Ile Arg Ile Val Leu Leu Val Gly Asn Ser His Tyr  
260 265 270  
Glu Glu Val Ala Thr Gly Ala Thr Ser Ala Arg Arg Leu Ile Val Glu  
275 280 285  
Lys Thr Asn Gln Phe Phe Ala Val Ser Cys Asp Val Ser Ser Pro Pro  
290 295 300  
Trp Asn Thr Val Arg Glu Gly Gly His Gly Ser Asn Gly Tyr Ser Ile  
305 310 315 320  
Phe Gln Thr Lys Lys Ile Val Glu Tyr His Asn Lys Asn Asn Met Leu  
325 330 335  
Pro Thr Pro Pro Arg Phe Ile Arg Gln Ile Thr Cys Val His Asn Cys  
340 345 350  
Pro Tyr Gln Ile Gly Pro Arg Ile Tyr Gln Lys Arg Val Cys His Arg  
355 360 365  
Pro Arg Arg Pro Arg Cys Lys Trp Cys Asn Thr Thr Glu Ala Val Ala  
370 375 380  
Pro Lys Lys Gln Gln Lys Thr Pro Leu Leu Tyr His Phe Arg Pro Cys  
385 390 395 400

JESTIN4.txt

Thr Gln Pro Tyr Leu Val Pro Leu Pro Leu Leu Leu Ala Pro Asn His  
405 410 415  
Tyr Pro Pro Leu Leu Leu Lys Cys Leu Pro Leu His Pro Ser His Gly  
420 425 430  
Lys Asn Cys Leu Arg Phe Tyr Cys Cys Gln Leu Gly Ser Gly Gln Gly  
435 440 445  
Pro His Asp Pro Leu Leu Ala Leu Ile Gly Gly Lys Lys Asn Gln Leu  
450 455 460  
Ile Leu Ala Cys Leu Pro Pro Lys Val Gly Arg Arg Pro Ser Ser Leu  
465 470 475 480  
Tyr Gln Ile Glu Asp His Gly Gly Leu Leu Ala Asn Gln Ser His  
485 490 495  
Asn Ala Gln Cys Tyr Ile Arg Leu His Pro Leu Pro Pro His Gln Leu  
500 505 510  
His Trp Lys Glu Lys Glu Leu Pro Leu Pro Pro Pro Pro Arg Ala  
515 520 525  
Leu Pro Pro Pro Pro Asp Pro Trp Ser Pro Gln Pro Pro Pro Thr  
530 535 540  
Lys Lys Lys Pro Leu Ala Glu Lys Ser Val Asp Tyr Arg Phe Val Phe  
545 550 555 560  
Ser Thr Arg Gln Leu Tyr  
565

<210> 22

<211> 569

<212> PRT

<213> Type B PWD circovirus

<400> 22

Leu Ala Ser Arg Cys Arg Cys Cys Arg Pro Leu Val Glu Ala Ala Val  
1 5 10 15

His Gly Ala Leu Leu Ile Ser Ser Ala Ser Gly Leu Gly Met Phe Pro  
20 25 30

Pro His Glu Ser Gln Ile Ile Arg Gly Phe Val Leu Ala Leu Phe Tyr  
35 40 45

Pro Ile Lys Trp Tyr Gly Lys Ile Ile Lys Asn Asn Ala Leu Leu Thr  
50 55 60

Ile Leu Phe Ser Ser Cys Arg Val Glu Leu Pro Glu Ser Ile Lys His  
65 70 75 80

Leu Leu Leu Ser Lys Ile Phe His Leu Pro Ile Gln Thr Gly Ala Ala  
85 90 95

JESTIN4.txt

Val Asp Leu Phe Arg Phe Ser Cys Ile Leu Leu Ile Phe Phe Val Ala  
100 105 110

Thr Phe Phe Ala Val Gln His Leu Thr Ser Ser Arg Ser Arg Leu Ser  
115 120 125

Leu Pro Thr Val Gln Arg Ser Ser His Thr Gly Gln Gln Leu Ala Pro  
130 135 140

Thr Gln His Gly Asn Cys Leu Leu Val Arg Tyr Arg Lys Asp Ser Ile  
145 150 155 160

Glu Ala Pro Gln Ser Phe Lys Gln Phe His Ala Pro Phe His Leu Leu  
165 170 175

Thr Ile Pro Leu Ser Ile Tyr Val Asp Asn His Pro Trp Arg Pro Thr  
180 185 190

Thr Phe Ala Phe Pro Ser Ser Ile Lys Cys Val Arg Phe Gly Cys Val  
195 200 205

Pro Phe Trp Arg Ser Val Leu Pro Pro Ile Thr Val Met Thr Phe Phe  
210 215 220

His Asn Asn Asn Ile Val Lys Ile Ala Pro Gln Gly Pro Ile Ile Gln  
225 230 235 240

Ser Gln Thr Ser Ser Ile Trp Gln Ser Tyr Leu Ser Phe Thr Ser Ser  
245 250 255

Tyr Arg Lys Gln Gly Ala Thr Asn Gln Asn Gly Ala Ile Leu Gly Arg  
260 265 270

Gln Phe Pro Val Gly Ser Ser Asp Trp Ser Tyr Phe Ser Lys Ile Pro  
275 280 285

Pro Asn Ser Gly Gln Tyr Lys Pro Leu Ile Ser Cys Phe Leu Gly Arg  
290 295 300

Leu Phe Pro Ala Leu Glu Asp Gly Lys Gly Trp Ala Arg Phe Lys  
305 310 315 320

Trp Ile Phe Trp Ile Val Ser Asp Lys Lys Asp Ser Arg Leu Pro Lys  
325 330 335

Glu Asn Leu Thr Leu His Pro Thr Lys Leu Ile Leu Asn Glu Ser Asn  
340 345 350

Tyr Met Cys Pro Val Ser Ile Thr Asn Arg Thr Thr Tyr Val Thr Lys  
355 360 365

Ser Arg Leu Ala Ser Ala Thr Thr Met Glu Leu Leu Lys Tyr Asp Gly  
370 375 380

Cys Ser Thr Glu Lys Thr Thr Gln Asn Ser Thr Ile Leu Leu Ser Ile  
385 390 395 400

Ser Leu Asn Pro Pro Leu Thr Gly Pro Thr Thr Pro Ser Pro Ser Pro  
405 410 415

Pro Ile Ala Pro Pro Thr Thr Met Pro Thr Met Pro Ser Pro Gln Pro  
420 425 430

JESTIN4.txt

Arg Gln Leu Thr Ile Met Phe Leu Leu Val Pro Ala Trp Glu Gly Thr  
 435 440 445  
 Val Arg Pro Ser Arg Pro Ala Pro Gly Ser Asn Leu Arg Leu Arg Glu  
 450 455 460  
 Glu Thr Thr Asn Leu Pro Cys Leu Ala Pro Thr Gln Gly Gly Glu Gln  
 465 470 475 480  
 Pro Phe Phe Thr Met Leu Ile Ser Asp Thr Trp Arg Gly Pro Pro Arg  
 485 490 495  
 Glu Ser Gln Pro Glu Ser Ser Leu Ile Asp Ser Pro Ala Pro Ser Ala  
 500 505 510  
 Pro Thr Ser Ser Ala Met Lys Gly Glu Gly Ala Thr Val Thr Ala Pro  
 515 520 525  
 Thr Ser Ser Gly Pro Ala Ala Ala Ser Ser Arg Ala Leu Ile Ala Ala  
 530 535 540  
 Pro Ala Thr Asp Glu Glu Glu Thr Val Gly Gly Gln Ile Arg Ile Gln  
 545 550 555 560  
 Phe Arg Phe Phe His Ala Thr Leu Ile  
 565

<210> 23

<211> 945

<212> DNA

<213> Type B PWD circovirus

<220>

<221> CDS

<222> (1)..(942)

<400> 23		
atg ccc agc aag aag aat gga aga agc gga ccc caa ccc cat aaa agg		
Met Pro Ser Lys Lys Asn Gly Arg Ser Gly Pro Gln Pro His Lys Arg		
1 5 10 15		48
tgg gtg ttc act ctg aat aat cct tcc gaa gac gag cgc aag aaa ata		
Trp Val Phe Thr Leu Asn Asn Pro Ser Glu Asp Glu Arg Lys Lys Ile		
20 25 30		96
cgg gat ctt cca ata tcc cta ttt gat tat ttt att gtt ggc gag gag		
Arg Asp Leu Pro Ile Ser Leu Phe Asp Tyr Phe Ile Val Gly Glu Glu		
35 40 45		144
ggt aat gag gaa gga cga aca cct cac ctc cag ggg ttc gct aat ttt		
Gly Asn Glu Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe		
50 55 60		192

## JESTIN4.txt

gtg aag aag cag act ttt aat aaa gtg aag tgg tat ttg ggt gcc cgc Val Lys Lys Gln Thr Phe Asn Lys Val Lys Trp Tyr Leu Gly Ala Arg 65 70 75 80	240
tgc cac atc gag aaa gcg aaa gga aca gat cag cag aat aaa gaa tac Cys His Ile Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr 85 90 95	288
tgc agt aaa gaa ggc aac tta ctg atg gag tgg gga gct cct aga tct Cys Ser Lys Glu Gly Asn Leu Leu Met Glu Cys Gly Ala Pro Arg Ser 100 105 110	336
cag gga caa cgg agt gac ctg tct act gct gtt agt acc ttg ttg gag Gln Gly Gln Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu 115 120 125	384
agc ggg agt ctg gtt acc gtt gca gag cag cac cct gta acg ttt gtc Ser Gly Ser Leu Val Thr Val Ala Glu Gln His Pro Val Thr Phe Val 130 135 140	432
aga aat ttc cgc ggg ctg gct gaa ctt ttg aaa gtt agc ggg aaa atg Arg Asn Phe Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met 145 150 155 160	480
cag aag cgt gat tgg aag act aat gta cac gtc att gtt ggg cca cct Gln Lys Arg Asp Trp Lys Thr Asn Val His Val Ile Val Gly Pro Pro 165 170 175	528
ggg tgt ggt aaa agc aaa tgg gct gct aat ttt gca gac ccg gaa acc Gly Cys Gly Lys Ser Lys Trp Ala Ala Asn Phe Ala Asp Pro Glu Thr 180 185 190	576
aca tac tgg aaa cca cct aga aac aag tgg tgg gat ggt tac cat ggt Thr Tyr Trp Lys Pro Pro Arg Asn Lys Trp Trp Asp Gly Tyr His Gly 195 200 205	624
gaa gaa gtg gtt gtt att gat gac ttt tat ggc tgg ctg ccc tgg gat Glu Glu Val Val Val Ile Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp 210 215 220	672
gat cta ctg aga ctg tgt gat cga tat cca ttg act gta gag act aaa Asp Leu Leu Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys 225 230 235 240	720
ggt gga act gta cct ttt ttg gcc cgc agt att ctg att acc agc aat Gly Gly Thr Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn 245 250 255	768
cag acc ccg ttg gaa tgg tac tcc tca act gct gtc cca gct gta gaa Gln Thr Pro Leu Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu 260 265 270	816
gct ctt tat cgg agg att act tcc ttg gta ttt tgg aag aat gct aca Ala Leu Tyr Arg Arg Ile Thr Ser Leu Val Phe Trp Lys Asn Ala Thr 275 280 285	864
gaa caa tcc acg gag gaa ggg ggc cag ttc gtc acc ctt tcc ccc cca Glu Gln Ser Thr Glu Glu Gly Gly Gln Phe Val Thr Leu Ser Pro Pro 290 295 300	912
tgc cct gaa ttt cca tat gaa ata aat tac tga Cys Pro Glu Phe Pro Tyr Glu Ile Asn Tyr 305 310	945

JESTIN4.txt

<210> 24

<211> 314

<212> PRT

<213> Type B PWD circovirus

<400> 24

Met Pro Ser Lys Lys Asn Gly Arg Ser Gly Pro Gln Pro His Lys Arg  
1 5 10 15

Trp Val Phe Thr Leu Asn Asn Pro Ser Glu Asp Glu Arg Lys Lys Ile  
20 25 30

Arg Asp Leu Pro Ile Ser Leu Phe Asp Tyr Phe Ile Val Gly Glu Glu  
35 40 45

Gly Asn Glu Glu Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe  
50 55 60

Val Lys Lys Gln Thr Phe Asn Lys Val Lys Trp Tyr Leu Gly Ala Arg  
65 70 75 80

Cys His Ile Glu Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Glu Tyr  
85 90 95

Cys Ser Lys Glu Gly Asn Leu Leu Met Glu Cys Gly Ala Pro Arg Ser  
100 105 110

Gln Gly Gln Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Glu  
115 120 125

Ser Gly Ser Leu Val Thr Val Ala Glu Gln His Pro Val Thr Phe Val  
130 135 140

Arg Asn Phe Arg Gly Leu Ala Glu Leu Leu Lys Val Ser Gly Lys Met  
145 150 155 160

Gln Lys Arg Asp Trp Lys Thr Asn Val His Val Ile Val Gly Pro Pro  
165 170 175

Gly Cys Gly Lys Ser Lys Trp Ala Ala Asn Phe Ala Asp Pro Glu Thr  
180 185 190

Thr Tyr Trp Lys Pro Pro Arg Asn Lys Trp Trp Asp Gly Tyr His Gly  
Page 50

## JESTIN4.txt

195

200

205

Glu Glu Val Val Val Ile Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp  
 210 215 220

Asp Leu Leu Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Glu Thr Lys  
 225 230 235 240

Gly Gly Thr Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn  
 245 250 255

Gln Thr Pro Leu Glu Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Glu  
 260 265 270

Ala Leu Tyr Arg Arg Ile Thr Ser Leu Val Phe Trp Lys Asn Ala Thr  
 275 280 285

Glu Gln Ser Thr Glu Glu Gly Gly Gln Phe Val Thr Leu Ser Pro Pro  
 290 295 300

Cys Pro Glu Phe Pro Tyr Glu Ile Asn Tyr  
 305 310

<210> 25

<211> 702

<212> DNA

<213> Type B PWD circovirus

<220>

<221> CDS

<222> (1)..(699)

<400> 25  
 atg acg tat cca agg agg cgt tac cga aga aga aga cac cgc ccc cgc  
 Met Thr Tyr Pro Arg Arg Arg Tyr Arg Arg Arg Arg His Arg Pro Arg  
 1 5 10 15 48

agc cat ctt ggc cag atc ctc cgc cgc cgc ccc tgg ctc gtc cac ccc  
 Ser His Leu Gly Gln Ile Leu Arg Arg Arg Pro Trp Leu Val His Pro  
 20 25 30 96

cgc cac cgt tac cgc tgg aga agg aaa aat ggc atc ttc aac acc cgc  
 Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr Arg  
 35 40 45 144

ctc tcc cgc acc ttc gga tat act gtc aag cga acc aca gtc aga acg  
 192

## JESTIN4.txt

Leu	Ser	Arg	Thr	Phe	Gly	Tyr	Thr	Val	Lys	Arg	Thr	Thr	Val	Arg	Thr	
50					55				60							
ccc	tcc	tgg	gcf	gtg	gac	atg	atg	aga	tcc	aat	att	aat	gac	ttt	ctt	240
Pro	Ser	Trp	Ala	Val	Asp	Met	Met	Arg	Phe	Asn	Ile	Asn	Asp	Phe	Leu	
65				70				75						80		
ccc	cca	gga	ggg	ggg	tca	aac	ccc	cgc	tct	gtg	ccc	ttt	gaa	tac	tac	288
Pro	Pro	Gly	Gly	Gly	Ser	Asn	Pro	Arg	Ser	Val	Pro	Phe	Glu	Tyr	Tyr	
				85				90					95			
aga	ata	aga	aag	gtt	aag	gtt	gaa	tcc	tgg	ccc	tgc	tcc	ccg	atc	acc	336
Arg	Ile	Arg	Lys	Val	Lys	Val	Glu	Phe	Trp	Pro	Cys	Ser	Pro	Ile	Thr	
			100				105					110				
cag	ggt	gac	agg	gga	gtg	ggc	tcc	agt	gct	gtt	att	tta	gat	gat	aac	384
Gln	Gly	Asp	Arg	Gly	Val	Gly	Ser	Ser	Ala	Val	Ile	Leu	Asp	Asp	Asn	
			115			120					125					
ttt	gta	aca	aag	gcc	aca	gcc	ctc	acc	tat	gac	ccc	tat	gta	aac	tac	432
Phe	Val	Thr	Lys	Ala	Thr	Ala	Leu	Thr	Tyr	Asp	Pro	Tyr	Val	Asn	Tyr	
	130				135				140							
tcc	tcc	cgc	cat	acc	ata	acc	cag	ccc	tcc	tcc	tac	cac	tcc	cg	ta	480
Ser	Ser	Arg	His	Thr	Ile	Thr	Gln	Pro	Phe	Ser	Tyr	His	Ser	Arg	Tyr	
	145				150				155			160				
ttt	acc	ccc	aaa	cct	gtc	cta	gat	tcc	act	att	gat	tac	tcc	caa	cca	528
Phe	Thr	Pro	Lys	Pro	Val	Leu	Asp	Phe	Thr	Ile	Asp	Tyr	Phe	Gln	Pro	
	165					170				175						
aac	aac	aaa	aga	aac	cag	ctg	tgg	ctg	aga	cta	caa	act	gct	gga	aat	576
Asn	Asn	Lys	Arg	Asn	Gln	Leu	Trp	Leu	Arg	Leu	Gln	Thr	Ala	Gly	Asn	
			180			185					190					
gta	gac	cac	gta	ggc	ctc	ggc	act	gcf	tcc	gaa	aac	agt	ata	tac	gac	624
Val	Asp	His	Val	Gly	Leu	Gly	Thr	Ala	Phe	Glu	Asn	Ser	Ile	Tyr	Asp	
	195				200					205						
cag	gaa	tac	aat	atc	cgt	gta	acc	atg	tat	gta	caa	tcc	aga	gaa	ttt	672
Gln	Glu	Tyr	Asn	Ile	Arg	Val	Thr	Met	Tyr	Val	Gln	Phe	Arg	Glu	Phe	
	210				215				220							
aat	ttt	aaa	gac	ccc	cca	ctt	aac	cct	taa							702
Asn	Phe	Lys	Asp	Pro	Pro	Leu	Asn	Pro								
	225				230											

&lt;210&gt; 26

&lt;211&gt; 233

&lt;212&gt; PRT

&lt;213&gt; Type B PWD circovirus

&lt;400&gt; 26

Met Thr Tyr Pro Arg Arg Tyr Arg Arg Arg Arg His Arg Pro Arg  
1 5 10 15

JESTIN4.txt

Ser His Leu Gly Gln Ile Leu Arg Arg Arg Pro Trp Leu Val His Pro  
20 25 30

Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr Arg  
35 40 45

Leu Ser Arg Thr Phe Gly Tyr Thr Val Lys Arg Thr Thr Val Arg Thr  
50 55 60

Pro Ser Trp Ala Val Asp Met Met Arg Phe Asn Ile Asn Asp Phe Leu  
65 70 75 80

Pro Pro Gly Gly Ser Asn Pro Arg Ser Val Pro Phe Glu Tyr Tyr  
85 90 95

Arg Ile Arg Lys Val Lys Val Glu Phe Trp Pro Cys Ser Pro Ile Thr  
100 105 110

Gln Gly Asp Arg Gly Val Gly Ser Ser Ala Val Ile Leu Asp Asp Asn  
115 120 125

Phe Val Thr Lys Ala Thr Ala Leu Thr Tyr Asp Pro Tyr Val Asn Tyr  
130 135 140

Ser Ser Arg His Thr Ile Thr Gln Pro Phe Ser Tyr His Ser Arg Tyr  
145 150 155 160

Phe Thr Pro Lys Pro Val Leu Asp Phe Thr Ile Asp Tyr Phe Gln Pro  
165 170 175

Asn Asn Lys Arg Asn Gln Leu Trp Leu Arg Leu Gln Thr Ala Gly Asn  
180 185 190

Val Asp His Val Gly Leu Gly Thr Ala Phe Glu Asn Ser Ile Tyr Asp  
195 200 205

Gln Glu Tyr Asn Ile Arg Val Thr Met Tyr Val Gln Phe Arg Glu Phe  
210 215 220

Asn Phe Lys Asp Pro Pro Leu Asn Pro  
225 230

<210> 27

<211> 315

<212> DNA

## JESTIN4.txt

<213> Type B PWD circovirus

<220>

<221> CDS

<222> (1) .. (312)

<210> 28

<211> 104

<212> PRT

<213> Type B PWD circovirus

<400> 28

Met Val Thr Ile Pro Pro Leu Val Ser Arg Trp Phe Pro Val Cys Gly  
1 5 10 15

Phe Arg Val Cys Lys Ile Ser Ser Pro Phe Ala Phe Thr Thr Pro Arg  
20 25 30

Trp Pro His Asn Asp Val Tyr Ile Ser Leu Pro Ile Thr Leu Leu His  
Page 54

35

40

45

Phe Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser Asp  
50 55 60

Lys Arg Tyr Arg Val Leu Leu Cys Asn Gly His Gln Thr Pro Ala Leu  
65 70 75 80

Gln Gln Gly Thr His Ser Ser Arg Gln Val Thr Pro Leu Ser Leu Arg  
85 90 95

Ser Arg Ser Ser Thr Leu His Gln  
100

<210> 29

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 29

Val Asp Met Met Arg Phe Asn Ile Asn Asp Phe Leu Pro Pro Gly  
1 5 10 15

<210> 30

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 30

Gln Gly Asp Arg Gly Val Gly Ser Ser Ala Val Ile Leu Asp Asp  
1 5 10 15

<210> 31

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 31

Gly Val Gly Ser Ser Ala Val Ile Leu Asp Asp Asn Phe Val Thr  
1 5 10 15

JESTIN4.txt

<210> 32  
<211> 15  
<212> PRT  
<213> Type B PWD circovirus

<400> 32  
val Asp His Val Gly Leu Gly Thr Ala Phe Glu Asn Ser Ile Tyr  
1 5 10 15

<210> 33  
<211> 8  
<212> DNA  
<213> Type A PWD circovirus

<400> 33  
tgtggcga

8

<210> 34  
<211> 8  
<212> DNA  
<213> Type A PWD circovirus

<400> 34  
agtttcct

8

<210> 35  
<211> 20  
<212> DNA  
<213> Type A PWD circovirus

<400> 35  
tcat tagag ggtttcag

20

<210> 36  
<211> 8  
<212> DNA

JESTIN4.txt

<213> Type A PWD circovirus

<400> 36  
gtcaacct

8

<210> 37

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 37  
gtggttgc

8

<210> 38

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 38  
agcccagg

8

<210> 39

<211> 8

<212> DNA

<213> Type A PWD circovirus

<400> 39  
ttggctgg

8

<210> 40

<211> 12

<212> DNA

<213> Type A PWD circovirus

<400> 40  
tctagctctg gt

12

JESTIN4.txt

<210> 41  
<211> 12  
<212> DNA  
<213> Type A PWD circovirus

<400> 41  
atctcagctc gt

12

<210> 42  
<211> 12  
<212> DNA  
<213> Type A PWD circovirus

<400> 42  
tgtcctcctc tt

12

<210> 43  
<211> 8  
<212> DNA  
<213> Type A PWD circovirus

<400> 43  
tctctaga

8

<210> 44  
<211> 8  
<212> DNA  
<213> Type A PWD circovirus

<400> 44  
tgtaccaa

8

<210> 45  
<211> 8  
<212> DNA

JESTIN4.txt

<213> Type A PWD circovirus

<400> 45  
tccgtctt

8

<210> 46

<211> 20

<212> DNA

<213> Primer

<400> 46  
gtgtgctcga cattgggtgt

20

<210> 47

<211> 20

<212> DNA

<213> Primer

<400> 47  
tggaatgtta acgagctgag

20

<210> 48

<211> 20

<212> DNA

<213> Primer

<400> 48  
ctcgcagcca tcttgaaatg

20

<210> 49

<211> 20

<212> DNA

<213> Primer

<400> 49  
cgcgcgtaat acgactcact

20

JESTIN4.txt

<210> 50

<211> 26

<212> DNA

<213> Primer

<400> 50

cctgtctact gctgtgagta ccttgt

26

<210> 51

<211> 26

<212> DNA

<213> Primer

<400> 51

gcagtagaca ggtcaactccg ttgtcc

26

<210> 52

<211> 20

<212> DNA

<213> Primer

<400> 52

tggaatgtta actacacctaa

20

<210> 53

<211> 23

<212> DNA

<213> Primer

<400> 53

ggcggcgcca tctgttaacgg ttt

23

<210> 54

<211> 23

<212> DNA

JESTIN4.txt

<213> Primer

<400> 54  
gatggcggcg aaagacgggt atc

23

<210> 55

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 55

Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln Phe Leu Pro Pro  
1 5 10 15

<210> 56

<211> 14

<212> PRT

<213> Type A PWD circovirus

<400> 56

Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu  
1 5 10

<210> 57

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 57

Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala Asn Phe Val  
1 5 10 15

<210> 58

<211> 15

<212> PRT

<213> Type B PWD circovirus

JESTIN4.txt

<400> 58

Phe Thr Ile Asp Tyr Phe Gln Pro Asn Asn Lys Arg Asn Gln Leu  
1 5 10 15

<210> 59

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 59

Asp Gln Thr Ile Asp Trp Phe Gln Pro Asn Asn Lys Arg Asn Gln  
1 5 10 15

<210> 60

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 60

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr  
1 5 10 15

<210> 61

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 61

His Arg Pro Arg Ser His Leu Gly Gln Ile Leu Arg Arg Arg Pro  
1 5 10 15

<210> 62

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 62

JESTIN4.txt

Ser His Leu Gly Gln Ile Leu Arg Arg Arg Pro Trp Leu Val His  
1 5 10 15

<210> 63

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 63

Gln Ile Leu Arg Arg Arg Pro Trp Leu Val His Pro Arg His Arg  
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<210> 64

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 64

Arg Arg Pro Trp Leu Val His Pro Arg His Arg Tyr Arg Trp Arg  
1 5 10 15

<210> 65

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 65

Leu Val His Pro Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly  
1 5 10 15

<210> 66

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 66

Arg His Arg Tyr Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr  
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JESTIN4.txt

<210> 67

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 67

Arg Trp Arg Arg Lys Asn Gly Ile Phe Asn Thr Arg Leu Ser Arg  
1 5 10 15

<210> 68

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 68

Lys Asn Gly Ile Phe Asn Thr Arg Leu Ser Arg Thr Phe Gly Tyr  
1 5 10 15

<210> 69

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 69

Phe Asn Thr Arg Leu Ser Arg Thr Phe Gly Tyr Thr Val Lys Arg  
1 5 10 15

<210> 70

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 70

Leu Ser Arg Thr Phe Gly Tyr Thr Val Lys Arg Thr Thr Val Arg  
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<210> 71

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JESTIN4.txt

<212> PRT

<213> Type B PWD circovirus

<400> 71

Phe Gly Tyr Thr Val Lys Arg Thr Thr Val Arg Thr Pro Ser Trp  
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<210> 72

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 72

Val Lys Arg Thr Thr Val Arg Thr Pro Ser Trp Ala Val Asp Met  
1 5 10 15

<210> 73

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 73

Thr Val Arg Thr Pro Ser Trp Ala Val Asp Met Met Arg Phe Asn  
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<210> 74

<211> 15

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<213> Type B PWD circovirus

<400> 74

Pro Ser Trp Ala Val Asp Met Met Arg Phe Asn Ile Asn Asp Phe  
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<210> 75

<211> 15

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JESTIN4.txt

<213> Type B PWD circovirus

<400> 75

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<210> 76

<211> 15

<212> PRT

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<400> 76

Asn Asp Phe Leu Pro Pro Gly Gly Ser Asn Pro Arg Ser Val  
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<210> 77

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 77

Pro Pro Gly Gly Ser Asn Pro Arg Ser Val Pro Phe Glu Tyr  
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<210> 78

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 78

Gly Ser Asn Pro Arg Ser Val Pro Phe Glu Tyr Tyr Arg Ile Arg  
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<210> 79

<211> 15

<212> PRT

<213> Type B PWD circovirus

JESTIN4.txt

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Arg Ser Val Pro Phe Glu Tyr Tyr Arg Ile Arg Lys Val Lys Val  
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<210> 80

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 80

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<210> 81

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 81

Arg Ile Arg Lys Val Lys Val Glu Phe Trp Pro Cys Ser Pro Ile  
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<400> 82

Val Lys Val Glu Phe Trp Pro Cys Ser Pro Ile Thr Gln Gly Asp  
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<400> 83

JESTIN4.txt

Phe Trp Pro Cys Ser Pro Ile Thr Gln Gly Asp Arg Gly Val Gly  
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<210> 84

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<211> 15

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Ser His Leu Gly Asn Ile Leu Arg Arg Pro Tyr Leu Val His  
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<210> 86

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<400> 86

Asn Ile Leu Arg Arg Pro Tyr Leu Val His Pro Ala Phe Arg  
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<210> 87

<211> 15

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<400> 87

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JESTIN4.txt

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<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 88

Leu Val His Pro Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys  
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<210> 89

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 89

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<210> 90

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 90

Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn Ser Arg Leu  
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<210> 91

<211> 15

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<213> Type A PWD circovirus

<400> 91

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JESTIN4.txt

<212> PRT

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Arg Glu Phe Val Leu Thr Ile Arg Gly Gly His Ser Gln Pro Ser  
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<400> 95

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JESTIN4.txt

<213> Type A PWD circovirus

<400> 96

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<213> Type A PWD circovirus

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<210> 98

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<212> PRT

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<400> 98

Asn Val Asn Glu Leu Arg Phe Asn Ile Gly Gln Phe Leu Pro Pro  
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<210> 99

<211> 15

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<400> 99

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<210> 101

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<400> 101

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<210> 102

<211> 15

<212> PRT

<213> Type A PWD circovirus

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Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr Tyr Arg Ile  
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<210> 103

<211> 15

<212> PRT

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<400> 103

Pro Leu Pro Leu Pro Phe Gln Tyr Tyr Arg Ile Arg Lys Ala Lys  
1 5 10 15

<210> 104

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<400> 104

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<211> 15

<212> PRT

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<400> 105

Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro  
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<210> 106

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 106

Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile Thr Ser Asn  
1 5 10 15

<210> 107

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<213> Type A PWD circovirus

<400> 107

Glu Phe Tyr Pro Arg Asp Pro Ile Thr Ser Asn Gln Arg Gly Val  
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Arg Asp Pro Ile Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val  
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JESTIN4.txt

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<211> 15

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<210> 110

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<212> PRT

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<210> 114

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<212> PRT

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<400> 114

Ala Thr Ala Leu Thr Tyr Asp Pro Tyr Val Asn Tyr Ser Ser Arg  
1 5 10 15

<210> 115

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 115

Thr Tyr Asp Pro Tyr Val Asn Tyr Ser Ser Arg His Thr Ile Thr  
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<210> 116

<211> 15

<212> PRT

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<400> 116

Tyr Val Asn Tyr Ser Ser Arg His Thr Ile Thr Gln Pro Phe Ser  
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JESTIN4.txt

<213> Type B PWD circovirus

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Ser Ser Arg His Thr Ile Thr Gln Pro Phe Ser Tyr His Ser Arg  
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<210> 118

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Thr Ile Thr Gln Pro Phe Ser Tyr His Ser Arg Tyr Phe Thr Pro  
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<210> 119

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 119

Pro Phe Ser Tyr His Ser Arg Tyr Phe Thr Pro Lys Pro Val Leu  
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<210> 120

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 120

His Ser Arg Tyr Phe Thr Pro Lys Pro Val Leu Asp Phe Thr Ile  
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<211> 15

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JESTIN4.txt

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<211> 15

<212> PRT

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<400> 122

Pro Val Leu Asp Phe Thr Ile Asp Tyr Phe Gln Pro Asn Asn Lys  
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<210> 123

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<212> PRT

<213> Type B PWD circovirus

<400> 123

Phe Thr Ile Asp Tyr Phe Gln Pro Asn Asn Lys Arg Asn Gln Leu  
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<210> 124

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 124

Tyr Phe Gln Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu Arg Leu  
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<210> 125

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 125

JESTIN4.txt

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<210> 126

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 126

Asn Gln Leu Trp Leu Arg Leu Gln Thr Ala Gly Asn Val Asp His  
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<210> 127

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 127

Leu Arg Leu Gln Thr Ala Gly Asn Val Asp His Val Gly Leu Gly  
1 5 10 15

<210> 128

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 128

Thr Ala Gly Asn Val Asp His Val Gly Leu Gly Thr Ala Phe Glu  
1 5 10 15

<210> 129

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<213> Type B PWD circovirus

<400> 129

Gly Leu Gly Thr Ala Phe Glu Asn Ser Ile Tyr Asp Gln Glu Tyr  
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JESTIN4.txt

<210> 130

<211> 15

<212> PRT

<213> Type B PWD circovirus

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Ala Phe Glu Asn Ser Ile Tyr Asp Gln Glu Tyr Asn Ile Arg Val  
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<210> 131

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 131

Ser Ile Tyr Asp Gln Glu Tyr Asn Ile Arg Val Thr Met Tyr Val  
1 5 10 15

<210> 132

<211> 15

<212> PRT

<213> Type B PWD circovirus

<400> 132

Gln Glu Tyr Asn Ile Arg Val Thr Met Tyr Val Gln Phe Arg Glu  
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<210> 133

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<212> PRT

<213> Type B PWD circovirus

<400> 133

Ile Arg Val Thr Met Tyr Val Gln Phe Arg Glu Phe Asn Phe Lys  
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JESTIN4.txt

<212> PRT

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Met Tyr Val Gln Phe Arg Glu Phe Asn Phe Lys Asp Pro Pro Leu  
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<212> PRT

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<400> 135

Val Gln Phe Arg Glu Phe Asn Phe Lys Asp Pro Pro Leu Asn Pro  
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<210> 136

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<212> PRT

<213> Type A PWD circovirus

<400> 136

Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala Asn Phe Val  
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<210> 137

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<212> PRT

<213> Type A PWD circovirus

<400> 137

Ser Thr Val Val Ile Leu Asp Ala Asn Phe Val Thr Pro Ser Thr  
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<212> PRT

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Ile Leu Asp Ala Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr  
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<211> 15

<212> PRT

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<400> 139

Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile  
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<400> 140

Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn Tyr Ser Ser  
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<212> PRT

<213> Type A PWD circovirus

<400> 141

Leu Ala Tyr Asp Pro Tyr Ile Asn Tyr Ser Ser Arg His Thr Ile  
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JESTIN4.txt

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<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 143

Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser  
1 5 10 15

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<213> Type A PWD circovirus

<400> 144

His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg Tyr Phe Thr  
1 5 10 15

<210> 145

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<212> PRT

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<400> 145

Gln Pro Phe Thr Tyr His Ser Arg Tyr Phe Thr Pro Lys Pro Glu  
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JESTIN4.txt

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<210> 147

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<213> Type A PWD circovirus

<400> 147

Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe  
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<210> 148

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<400> 148

Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe Gln Pro Asn Asn  
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<210> 149

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<213> Type A PWD circovirus

<400> 149

Asp Gln Thr Ile Asp Trp Phe Gln Pro Asn Asn Lys Arg Asn Gln  
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<210> 150

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<212> PRT

<213> Type A PWD circovirus

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Asp Trp Phe Gln Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His  
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JESTIN4.txt

<210> 151

<211> 15

<212> PRT

<213> Type A PWD circovirus

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<210> 152

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 152

Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr Asn Val Glu  
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<210> 153

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 153

Trp Leu His Leu Asn Thr His Thr Asn Val Glu His Thr Gly Leu  
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<210> 154

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 154

Asn Thr His Thr Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu  
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<210> 155

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JESTIN4.txt

<212> PRT

<213> Type A PWD circovirus

<400> 155

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr  
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<210> 156

<211> 15

<212> PRT

<213> Type A PWD circovirus

<400> 156

Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Thr Thr Ala Gln Asn  
1 5 10 15

<210> 157

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<212> PRT

<213> Type A PWD circovirus

<400> 157

Tyr Ala Leu Gln Asn Ala Thr Thr Ala Gln Asn Tyr Val Val Arg  
1 5 10 15

<210> 158

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<213> Type A PWD circovirus

<400> 158

Asn Ala Thr Thr Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr  
1 5 10 15

<210> 159

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JESTIN4.txt

<213> Type A PWD circovirus

<400> 159

Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg  
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<210> 160

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<212> PRT

<213> Type A PWD circovirus

<400> 160

Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu Phe Ile Leu  
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<210> 161

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<212> PRT

<213> Type A PWD circovirus

<400> 161

Thr Ile Tyr Val Gln Phe Arg Glu Phe Ile Leu Lys Asp Pro Leu  
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<210> 162

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<212> PRT

<213> Type A PWD circovirus

<400> 162

Tyr Val Gln Phe Arg Glu Phe Ile Leu Lys Asp Pro Leu Asn Glu  
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<210> 163

<211> 1759

<212> DNA

<213> Type A PWD circovirus

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 tgtacacgtc atagtgggcc cgcccggttg tggaaagagc cagtgggccc gtaatttgc 600  
 tgagcctagc gacacctact ggaagcctag tagaaataag tggtggtatg gatatcatgg 660  
 agaagaagtt gttttttgg atgattttta tggctggta cttggatg atctactgag 720  
 actgtgtgac cggtatccat tgactgtaga gactaaaggc ggtactgttc ctttttggc 780  
 tcgcagtatt ttgattacca gcaatcaggc cccccaggaa tggctactcct caactgctgt 840  
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 agaacaatca acggaggtac ccgaaggccg atttgaagca gtggacccac cctgtgccct 960  
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 tggagggggt tacaaagttg gcatccaaga taacaacagt ggacccaaca cctctttcat 1380  
 tagaggtgat ggggtctctg gggtaaaatt catatttagc ctttctaata cggttagtatt 1440  
 ggaaaggtag gggtaggggg ttggtgccgc ctgagggggg gaggaactgg ccgatgttga 1500  
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## JESTIN4.txt

attctttaga aaggcggcaa ttgaagatac ccgtcttcg ggcgcattcg taacggttc	1620
tgaaggcggg gtgtccaaa tatggcttc tccggaggat gtttccaaga tggctgcggg	1680
ggcgggtcct tcttctgcgg taacgcctcc ttggccacgt catcctataa aagtgaaaga	1740
agtgcgctgc tgttagtatt	1759

&lt;210&gt; 165

&lt;211&gt; 312

&lt;212&gt; PRT

&lt;213&gt; Type A PWD circovirus

&lt;400&gt; 165

Met Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe	
1 5 10 15	

Thr Leu Asn Asn Pro Ser Gly Gly Lys Asn Lys Ile Arg Gly Leu	
20 25 30	

Pro Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Gly Gly Leu Gly	
35 40 45	

Gly Gly Arg Thr Pro His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys	
50 55 60	

Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile	
65 70 75 80	

Gly Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Gly Tyr Cys Ser Lys	
85 90 95	

Gly Gly His Ile Leu Ile Gly Cys Gly Ala Pro Arg Asn Gln Gly Lys	
100 105 110	

Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Gly Thr Gly Ser	
115 120 125	

Leu Val Thr Val Ala Gly Gln Phe Pro Val Thr Tyr Val Arg Asn Phe	
130 135 140	

Arg Gly Leu Ala Gly Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg	
145 150 155 160	

Asp Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly	
165 170 175	

Lys Ser Gln Trp Ala Arg Asn Phe Ala Gly Pro Arg Asp Thr Tyr Trp	
180 185 190	

Lys Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Gly Val	
195 200 205	

Val Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu	
210 215 220	

JESTIN4.txt

Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Gly Thr Lys Gly Gly Thr  
225 230 235 240

Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro  
245 250 255

Gln Gly Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Gly Ala Leu Tyr  
260 265 270

Arg Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Gly Gln Ser  
275 280 285

Thr Gly Val Pro Gly Gly Arg Phe Gly Ala Val Asp Pro Pro Cys Ala  
290 295 300

Leu Phe Pro Tyr Lys Ile Asn Tyr  
305 310

<210> 166

<211> 312

<212> PRT

<213> Type A PWD circovirus

<400> 166

Met Pro Ser Lys Lys Ser Gly Pro Gln Pro His Lys Arg Trp Val Phe  
1 5 10 15

Thr Leu Asn Asn Pro Ser Gly Gly Lys Asn Lys Ile Arg Gly Leu  
20 25 30

Pro Ile Ser Leu Phe Asp Tyr Phe Val Cys Gly Gly Gly Leu Gly  
35 40 45

Gly Gly Arg Thr Ala His Leu Gln Gly Phe Ala Asn Phe Ala Lys Lys  
50 55 60

Gln Thr Phe Asn Lys Val Lys Trp Tyr Phe Gly Ala Arg Cys His Ile  
65 70 75 80

Gly Lys Ala Lys Gly Thr Asp Gln Gln Asn Lys Gly Tyr Cys Ser Lys  
85 90 95

Gly Gly His Ile Leu Ile Gly Cys Gly Ala Pro Arg Asn Gln Gly Lys  
100 105 110

Arg Ser Asp Leu Ser Thr Ala Val Ser Thr Leu Leu Gly Thr Gly Ser  
115 120 125

Leu Val Thr Val Ala Gly Gln Phe Pro Val Thr Tyr Val Arg Asn Phe  
130 135 140

Arg Gly Leu Ala Gly Leu Leu Lys Val Ser Gly Lys Met Gln Gln Arg  
145 150 155 160

Asp Trp Lys Thr Ala Val His Val Ile Val Gly Pro Pro Gly Cys Gly  
165 170 175

JESTIN4.txt

Lys Ser Gln Trp Ala Arg Asn Phe Ala Gly Pro Ser Asp Thr Tyr Trp  
180 185 190

Lys Pro Ser Arg Asn Lys Trp Trp Asp Gly Tyr His Gly Gly Gly Val  
195 200 205

Val Val Leu Asp Asp Phe Tyr Gly Trp Leu Pro Trp Asp Asp Leu Leu  
210 215 220

Arg Leu Cys Asp Arg Tyr Pro Leu Thr Val Gly Thr Lys Gly Gly Thr  
225 230 235 240

Val Pro Phe Leu Ala Arg Ser Ile Leu Ile Thr Ser Asn Gln Ala Pro  
245 250 255

Gln Gly Trp Tyr Ser Ser Thr Ala Val Pro Ala Val Gly Ala Leu Tyr  
260 265 270

Arg Arg Ile Thr Thr Leu Gln Phe Trp Lys Thr Ala Gly Gly Gln Ser  
275 280 285

Thr Gly Val Pro Gly Gly Arg Phe Gly Ala Val Asp Pro Pro Cys Ala  
290 295 300

Leu Phe Pro Tyr Lys Ile Asn Tyr  
305 310

<210> 167

<211> 233

<212> PRT

<213> Type A PWD circovirus

<400> 167

Met Thr Trp Pro Arg Arg Arg Tyr Arg Arg Arg Arg Thr Arg Pro Arg  
1 5 10 15

Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro Tyr Leu Ala His Pro  
20 25 30

Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn  
35 40 45

Ser Arg Leu Ser Thr Glu Phe Val Leu Thr Ile Arg Gly Gly His Ser  
50 55 60

Gln Pro Ser Trp Asn Val Asn Tyr Leu Lys Phe Asn Ile Gly Gln Phe  
65 70 75 80

Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr  
85 90 95

Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile  
100 105 110

Thr Ser Asn Gln Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala  
115 120 125

JESTIN4.txt

Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn  
130 135 140

Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg  
145 150 155 160

Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Asp Trp Phe His  
165 170 175

Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr  
180 185 190

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Ala Thr  
195 200 205

Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu  
210 215 220

Phe Ile Leu Lys Asp Pro Leu Asn Lys  
225 230

<210> 168

<211> 233

<212> PRT

<213> Type A PWD circovirus

<400> 168

Met Thr Trp Pro Arg Arg Arg Tyr Arg Arg Arg Arg Thr Arg Pro Arg  
1 5 10 15

Ser His Leu Gly Asn Ile Leu Arg Arg Arg Pro Tyr Leu Val His Pro  
20 25 30

Ala Phe Arg Asn Arg Tyr Arg Trp Arg Arg Lys Thr Gly Ile Phe Asn  
35 40 45

Cys Arg Leu Ser Lys Glu Phe Val Ile Thr Ile Arg Gly Gly His Ser  
50 55 60

Gln Pro Ser Trp Ile Val Asn Ile Leu Arg Phe Asn Ile Gly Gln Phe  
65 70 75 80

Leu Pro Pro Ser Gly Gly Thr Asn Pro Leu Pro Leu Pro Phe Gln Tyr  
85 90 95

Tyr Arg Ile Arg Lys Ala Lys Tyr Glu Phe Tyr Pro Arg Asp Pro Ile  
100 105 110

Thr Ser Asn Glu Arg Gly Val Gly Ser Thr Val Val Ile Leu Asp Ala  
115 120 125

Asn Phe Val Thr Pro Ser Thr Asn Leu Ala Tyr Asp Pro Tyr Ile Asn  
130 135 140

Tyr Ser Ser Arg His Thr Ile Arg Gln Pro Phe Thr Tyr His Ser Arg  
145 150 155 160

JESTIN4.txt

Tyr Phe Thr Pro Lys Pro Glu Leu Asp Gln Thr Ile Glu Trp Phe His  
165 170 175

Pro Asn Asn Lys Arg Asn Gln Leu Trp Leu His Leu Asn Thr His Thr  
180 185 190

Asn Val Glu His Thr Gly Leu Gly Tyr Ala Leu Gln Asn Ala Ala Thr  
195 200 205

Ala Gln Asn Tyr Val Val Arg Leu Thr Ile Tyr Val Gln Phe Arg Glu  
210 215 220

Phe Ile Leu Lys Asp Pro Leu Asn Lys  
225 230

<210> 169

<211> 206

<212> PRT

<213> Type A PWD circovirus

<400> 169

Met Ile Ser Ile Pro Pro Leu Ile Ser Thr Arg Leu Pro Val Gly Val  
1 5 10 15

Pro Arg Leu Ser Lys Ile Thr Gly Pro Leu Ala Leu Pro Thr Thr Gly  
20 25 30

Arg Ala His Tyr Asp Val Tyr Ser Cys Leu Pro Ile Thr Leu Leu His  
35 40 45

Leu Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser His  
50 55 60

Ile Arg Tyr Arg Glu Leu Leu Gly Tyr Ser His Gln Arg Pro Arg Leu  
65 70 75 80

Gln Lys Gly Thr His Ser Ser Arg Gln Val Ala Ala Leu Pro Leu Val  
85 90 95

Pro Arg Ser Ser Thr Leu Asp Lys Tyr Val Ala Phe Phe Thr Ala Val  
100 105 110

Phe Phe Ile Leu Leu Val Gly Ser Phe Arg Phe Leu Asp Val Ala Ala  
115 120 125

Gly Thr Lys Ile Pro Leu His Leu Val Lys Ser Leu Leu Leu Ser Lys  
130 135 140

Ile Arg Lys Pro Leu Glu Val Arg Ser Ser Thr Leu Phe Gln Thr Phe  
145 150 155 160

Leu Ser Ala Asn Lys Ile Ile Lys Lys Gly Asp Trp Lys Leu Pro Tyr  
165 170 175

Phe Val Phe Leu Leu Leu Gly Arg Ile Ile Lys Gly Glu His Pro Pro  
180 185 190

## JESTIN4.txt

Leu Met Gly Leu Arg Ala Ala Phe Leu Ala Trp His Phe His  
 195 200 205

<210> 170

<211> 206

<212> PRT

<213> Type A PWD circovirus

<400> 170

Met Ile Ser Ile Pro Pro Leu Ile Ser Thr Arg Leu Pro Val Gly Val  
 1 5 10 15

Ala Arg Leu Ser Lys Ile Thr Gly Pro Leu Ala Leu Pro Thr Thr Gly  
 20 25 30

Arg Ala His Tyr Asp Val Tyr Ser Cys Leu Pro Ile Thr Leu Leu His  
 35 40 45

Leu Pro Ala His Phe Gln Lys Phe Ser Gln Pro Ala Glu Ile Ser His  
 50 55 60

Ile Arg Tyr Arg Glu Leu Leu Gly Tyr Ser His Gln Arg Pro Arg Leu  
 65 70 75 80

Gln Lys Gly Thr His Ser Ser Arg Gln Val Ala Ala Leu Pro Leu Val  
 85 90 95

Pro Arg Ser Ser Thr Leu Asp Lys Tyr Val Ala Phe Phe Thr Ala Val  
 100 105 110

Phe Phe Ile Leu Leu Val Gly Ser Phe Arg Phe Leu Asp Val Ala Ala  
 115 120 125

Gly Thr Lys Ile Pro Leu His Leu Val Lys Ser Leu Leu Ser Lys  
 130 135 140

Ile Ser Lys Pro Leu Glu Val Ser Ser Ser Thr Leu Phe Gln Thr Phe  
 145 150 155 160

Leu Ser Ala Asn Lys Ile Ile Lys Lys Gly Asp Trp Lys Leu Pro Tyr  
 165 170 175

Phe Val Phe Leu Leu Leu Gly Arg Ile Ile Lys Gly Glu His Pro Pro  
 180 185 190

Leu Met Gly Leu Arg Ala Ala Phe Leu Ala Trp His Phe His  
 195 200 205